BLM LIBRARY
88013862

U.S. Department of the Interior/Minerals Management Service

Leasing Energy Resources on the Outer Continental Shelf

TN
871.3
.M563
1987

#17802059
88013862
TN
871.3
.M563
1987

Leasing Energy Resources on the Outer Continental Shelf

BLM LIBRARY
SC-324A, BLDG. 50
DENVER FEDERAL CENTER
P. O. BOX 25047
DENVER, CO 80225-0047

U.S. DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE
JULY 31, 1987

This document may be obtained by writing to the following address and requesting document by title:

OFFSHORE MINERALS MANAGEMENT, MS 645
MINERALS MANAGEMENT SERVICE
WASHINGTON, DC 20240

Foreword

This booklet provides a basic review of the leasing process for oil and gas on the Federal Outer Continental Shelf. I hope it will improve public understanding of the process and contribute to meaningful discussions about Federal offshore leasing policy.

In the 33 years since leasing was first authorized in 1953, more than 84 billion dollars in revenues have been generated, and in that time many changes have occurred in the leasing process. While virtually each of 89 lease sales held between 1953 and 1986 had individual characteristics, leasing has settled into a stable process with certain standardized steps covering a time period of two or more years for each sale.

Federal Outer Continental Shelf leases exist off all coasts. Of 5,068 leases in existence at the end of 1986, 83 percent were in the Gulf of Mexico, 12 percent were off Alaska, 3 percent were off the Pacific coast, and 2 percent were off the Atlantic coast. While exploration and leasing activity slowed in 1986 due to declining oil prices, the contribution that Federal offshore leasing makes to the national energy picture is substantial. About one-eighth of the Nation's domestic oil production comes from Federal waters as does about one-quarter of its natural gas. Because of the long lead times involved from leasing to exploration to production, it is essential that sound leasing policies continue.

Wm D Bettenberg
Director
Minerals Management Service

July 31, 1987

Contents

FOREWORD iii

Chapter 1. INTRODUCTION 1

Chapter 2. BACKGROUND 3

- A. Location, Description, and Extent of the Continental Shelf 3
- B. History of Offshore Petroleum Exploration and Development 3
- C. Geology of Petroleum Occurrence 6
- D. Categories of Resources and Reserves 7

Chapter 3. LEASING FRAMEWORK 8

- A. The 5-Year Program and Leasing Schedule 8
- B. OCS Advisory Board 9
- C. OCS Oil and Gas Information Program 14
- D. Environmental Studies 14
- E. Collection of Geological and Geophysical Data 16
- F. Area of Hydrocarbon Potential 18

Chapter 4. LEASING PROCEDURES FOR THE OCS 19

- A. Call for Information and Nominations/Notice of Intent to Prepare an Environmental Impact Statement 19
- B. Area Identification 21
- C. Draft Environmental Impact Statement 22
- D. Public Hearing 24
- E. Final Environmental Impact Statement 24
- F. Proposed Notice of Sale 25
- G. Governors' Comments 25
- H. Final Notice of Sale 26
- I. Sale 26
- J. Decision to Accept or Reject Bids 27
- K. Issuance of the Lease 28

Chapter 5. STATUTORY AND REGULATORY AUTHORITY 30

- A. Laws 30
- B. Regulations 32
- C. Orders, Stipulations, Notices, and Conditions of Approval 32
- D. Presidential Proclamation on the Exclusive Economic Zone 34

Chapter 6. REVENUES 35

Chapter 7. OPERATIONS SUMMARY 37

SELECTED MMS REFERENCES 41

GLOSSARY 43
A. Terms 43
B. Abbreviations and Acronyms 48
ART/PHOTO CREDITS 49

Illustrations

Figure 1. Generalized profile of the continental margin 1
2. Summerland Oil Field, California, in the late 1800's 4
3. A drillship on location on a Federal lease 5
4. Structural and stratigraphic traps 6
5. OCS planning areas .... 10 & 11
6. OCS Advisory Board 12
7. MMS Director Bill Bettenberg gives briefing at OCS Policy Committee meeting 13
8. RTWG field trip to drilling rig offshore Mobile, Alabama 13
9. Funding of environmental studies by topic, FY 1973 through FY 1986 15
10. A group of fish. Some environmental studies involve the identification of biological communities in an area of interest... 16
11. A bowhead whale. An Alaska regional study explored the effects of oil and gas activities on this endangered species 17
12. Schematic showing geophysical survey methods 18
13. OCS leasing procedure 20
14. A scoping meeting in Eureka, California, for lease sale 91 provided an opportunity for public participation in the EIS 21
15. EIS content 23
16. A public hearing in San Francisco, California, provides interested parties an opportunity to comment on a draft EIS... 24
17. Industry representatives attend Gulf of Mexico lease sale 102 in 1985 26
18. Bids for leases are processed and tallied by MMS personnel 27
19. Gulf of Mexico Regional Director J. Rogers Pearcy publicly reads bids at a lease sale in 1986 28
20. Jack-up drilling unit which rests on the seafloor 33
21. Revenue from bonuses, rentals, and royalties received from OCS oil and gas leases, 1974 through 1986 36
22. Gravel island 38
23. Artificial ice island 38

Chapter 1. Introduction

Leasing energy resources on the Outer Continental Shelf (OCS) is guided by the OCS Lands Act of 1953 and its amendments. Although other Federal Agencies, for example, the U.S. Coast Guard and the U.S. Army Corps of Engineers, have responsibilities under the Act, the Department of the Interior (DOI) carries out most of the Act's provisions. This publication focuses on the activities of DOI, specifically the oil and gas leasing program of the Minerals Management Service (MMS).

Formed in 1982 from parts of the Bureau of Land Management, the U.S. Geological Survey, and the Office of OCS Program Coordination, MMS is charged with leasing oil and gas and other mineral resources on our Nation's OCS. The MMS operates the following four regional offices:

1. Alaska OCS Region (for the OCS off Alaska),
2. Atlantic OCS Region (for the OCS along the east coast),
3. Gulf of Mexico OCS Region (for the OCS in the Gulf of Mexico), and
4. Pacific OCS Region (for the OCS along the west coast and off Hawaii).

In addition to regional offices, MMS has an Office of Strategic and International Minerals located in Long Beach, California, which is responsible for developing a program to lease strategic, critical, and other nonenergy minerals on the OCS. (The authority to lease minerals

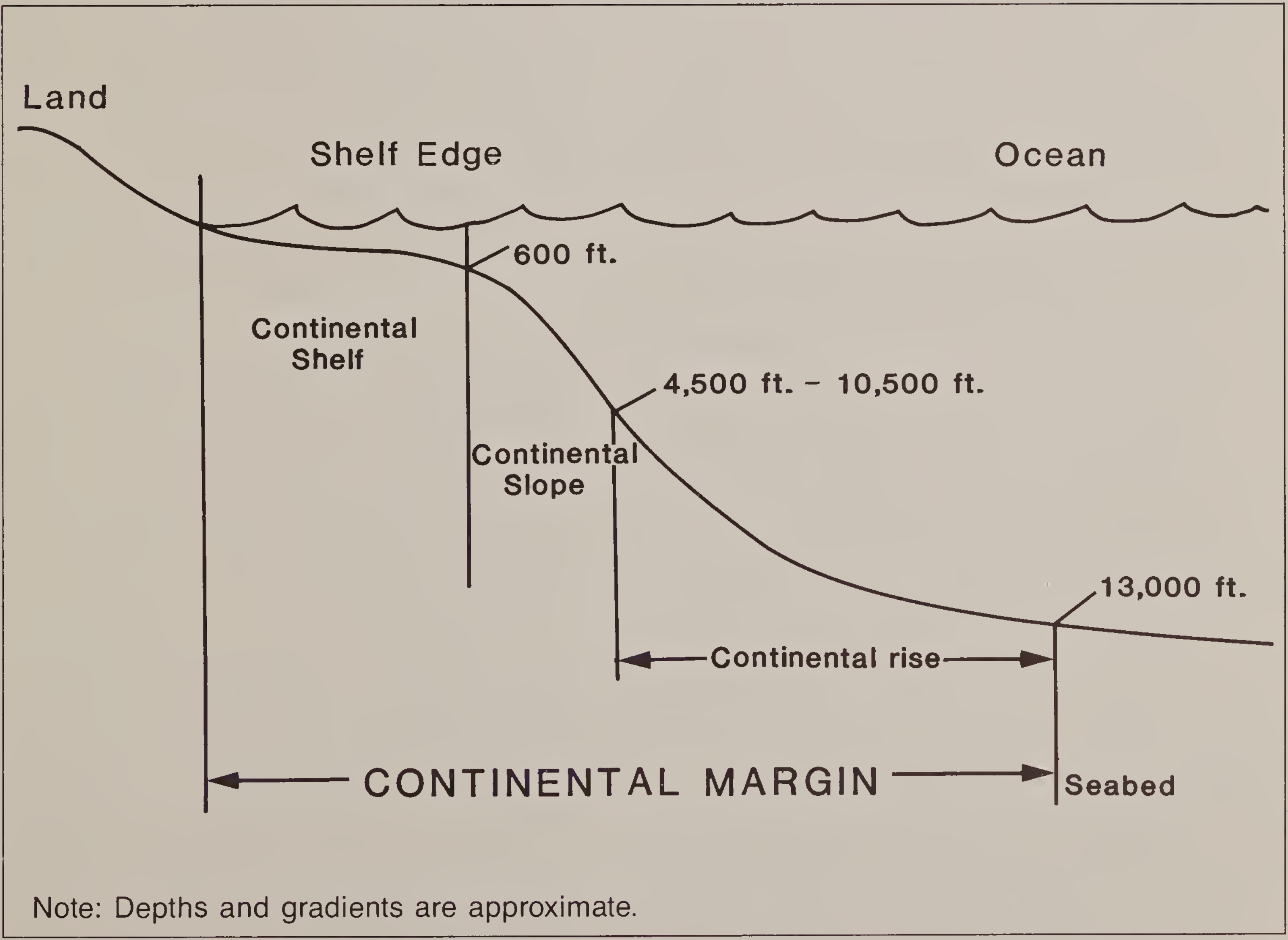


FIGURE 1: *Generalized profile of the continental margin.*

other than oil, gas, and sulphur is found under section 8(k) of the OCS Lands Act.) This office is working with several States through joint Federal/State task forces to develop a case-by-case environmentally sound and safe leasing program for nonenergy minerals. Besides the OCS leasing program, MMS has a responsibility for managing revenues. The Associate Director for Royalty Management is responsible for collecting, accounting, and disbursing of Federal mineral revenues from all Federal leases including those received from lessees of onshore lands. The annual report of royalty management activities is listed in Selected MMS References, page 41. The OCS oil and gas leasing program is described in this publication which is a revision of a booklet first published in 1974 entitled "Leasing and Management of Energy Resources on the Outer Continental Shelf." This booklet focuses solely on leasing. The MMS has a companion booklet that focuses on operations entitled "Managing Oil and Gas Operations on the Outer Continental Shelf." Although some of the same information is repeated, each publication has a different theme.

Other MMS publications concerning the OCS are listed in Selected MMS References. A glossary of terms and abbreviations is listed on page 48.

Chapter 2. Background

The MMS leases the rights to explore and develop oil and gas on Federal lands of the continental shelf. A description of the shelf and the history of oil and gas development follow.

A. Location, Description, and Extent of the Continental Shelf

1. *Location and Description.* Under the 1958 Geneva Convention on the Continental Shelf, the shelf is described as those submerged offshore areas lying seaward of the territorial sea to a depth of 200 meters (656 feet) and beyond that area to that depth which admits of mineral exploitation of natural resources. The term "continental shelf" is distinct from the term "Outer Continental Shelf" which has no scientific definition. The term "Outer Continental Shelf" is a legal term created by Federal statute—the OCS Lands Act. The extent of Federal jurisdiction over the OCS is determined by that Act which is described in the chapter on statutory authority on page 30. (Federal jurisdiction is not confined to the 200-meter contour.)

2. *Extent.* The contour, configuration, and extent of the continental shelf vary from one coastal area to another. The shelf is relatively narrow along the Pacific coast, wide along much of the Atlantic coast and the Gulf of Alaska, and widest in the Gulf of Mexico and around western and northwestern Alaska. The submerged seaward extension of a continent is the continental margin. In most areas, this submerged extension is composed of the gently sloping continental shelf, the steeper gradients of the continental slope, and the continental rise. Figure 1 shows a generalized profile of the continental margin.

B. History of Offshore Petroleum Exploration and Development

The exploration for offshore oil and gas resources began in the late 1800's. In 1896, 38 years after the first oil well was drilled onshore in Titusville, Pennsylvania, an offshore well was drilled off the coast of Summerland, California. Natural oil and gas seeps observed along the seashore at low tide encouraged further development. Additional wells were drilled from piers generally 300 to 500 feet long. The longest pier stretched 1,230 feet into the water. Approximately 400 wells were drilled in this manner—some producing from as deep as 600 feet below sea level. (See Figure 2.)

1. *Discoveries and Advancements.* The 1938 discovery of the Creole field, 1½ miles from the Louisiana coast in the Gulf of Mexico, marked the petroleum industry's first successful venture into open, unprotected waters. The discovery well was drilled from a 100- by 300-foot drilling platform secured to a foundation of timber piles set in 14 feet of water. In November 1947, a well was drilled almost out of sight of land. It was completed in 16 feet of water in the Ship Shoal area, approximately 12 miles south of Terrebonne Parish, Louisiana. This well was the first to be drilled in open water from a fixed platform/drilling tender combination—a major breakthrough in drilling-unit design for offshore use.

In the search for oil and gas in offshore areas, industry has continually extended and improved drilling and production technology. The technology used today for exploration and production of petroleum in deeper water illustrates these advancements. Conventional steel-

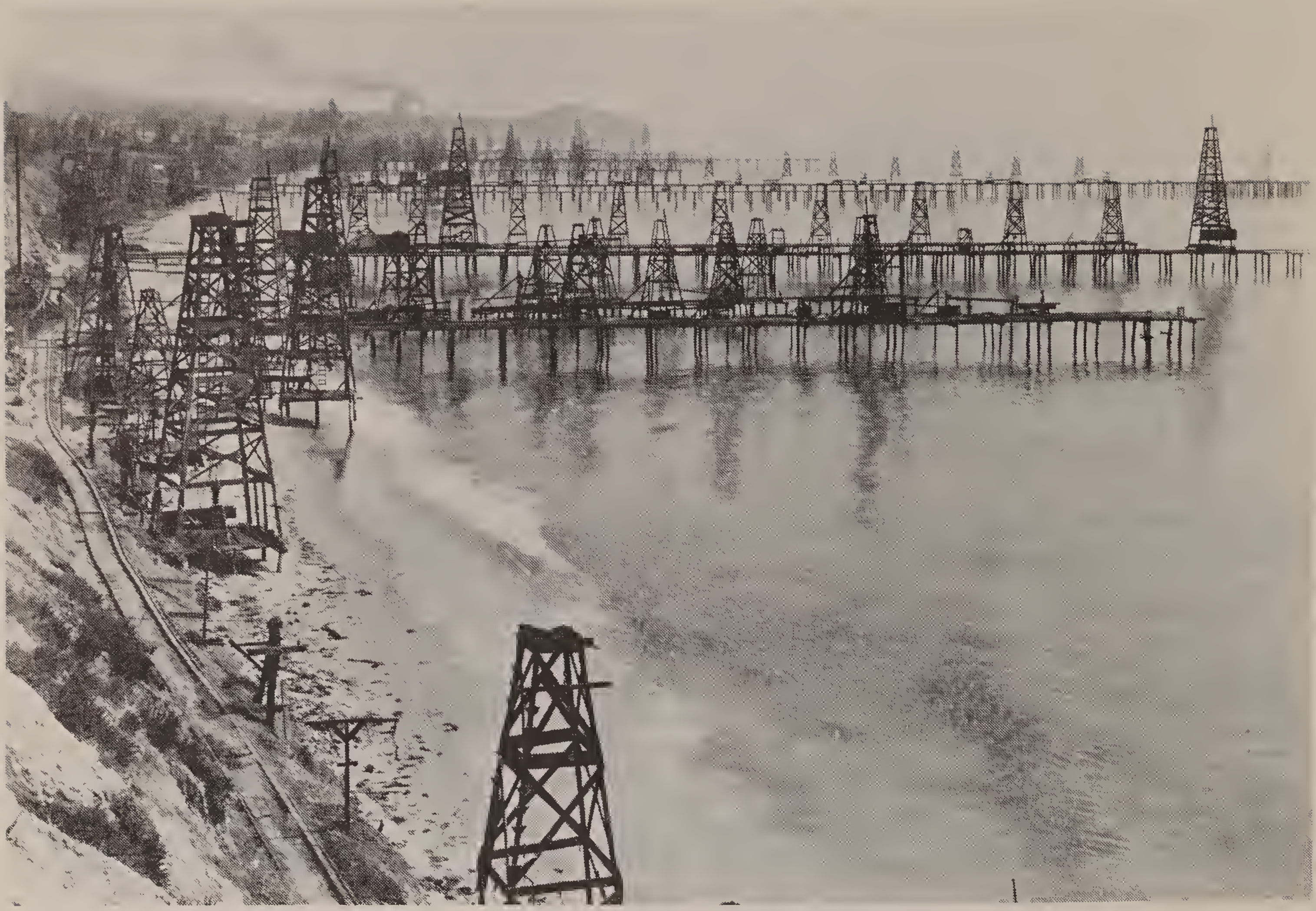


FIGURE 2: *Summerland Oil Field, California, in the late 1800's.*

jacketed production platforms stand in as much as 850 feet of water off southern California and in 1,025 feet of water off the Louisiana coast. In 1983, a compliant guyed-tower production platform was installed in 1,000 feet of water 110 miles southeast of New Orleans, Louisiana. In 1984, the drillship, Discoverer Seven Seas, drilled an exploratory well in 6,952 feet of water off the coast of New Jersey. In shallow arctic waters, offshore structure technology has evolved from artificial gravel islands to specially designed caisson-retained islands and ice-resistant mobile units. These advancements in offshore drilling and production technology have allowed additions to be made to domestic oil and gas resources.

2. *Federal Leasing.* The OCS lands are leased by the Federal Government to industry which explores for, develops, and produces oil and gas. The leasable area currently involves the submerged land generally 3 geographical miles from a State's coast to a line about 200 to 300 miles offshore.

Since Federal leasing began in 1954 through 1986, over 479 million acres have been offered for lease, of which about 41 million have actually been leased. From these leases, industry has produced 7.5 billion barrels of oil and 74.7 trillion cubic feet of gas. Cumulative totals show that about 95 percent of the oil and over 99 percent of the gas produced from the OCS came from the Gulf of Mexico; however, that long-term trend is changing. For example, during calendar year 1986, 7.5 percent of the Federal offshore crude oil came from offshore California. It is expected that development and production will increase in that area. Exploration efforts continue offshore Alaska and the Atlantic coast States.

About 12.0 percent of the Nation's domestic oil production came from the OCS in Fiscal Year (FY) 1986 as did about 23 percent of its natural gas. The Federal Government has received, on behalf of the people of the United States, more than $84 billion in bonuses, royalties, and rentals through 1986 from the OCS leasing program. Approximately $2.8 billion of this was received in 1986 alone.

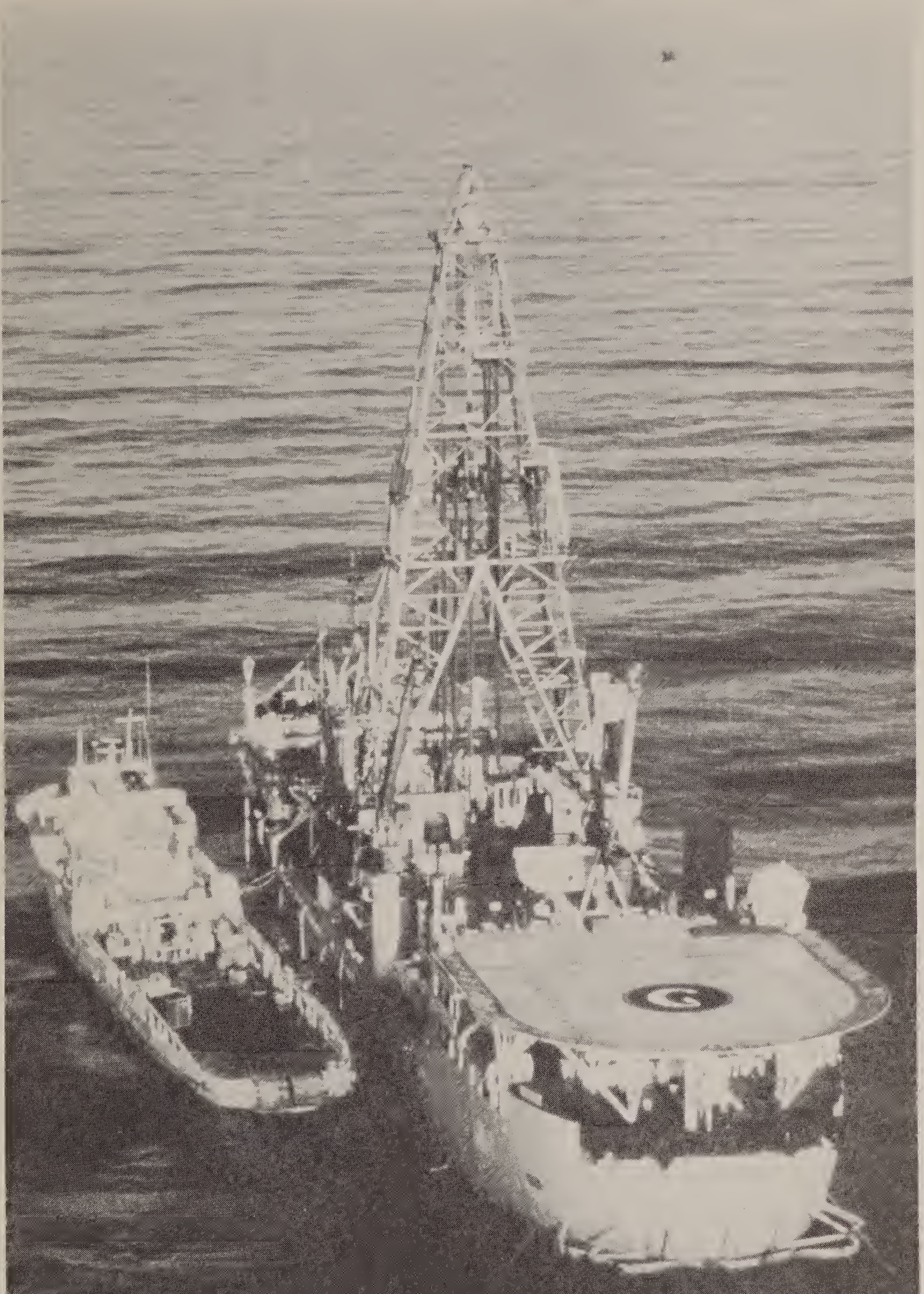
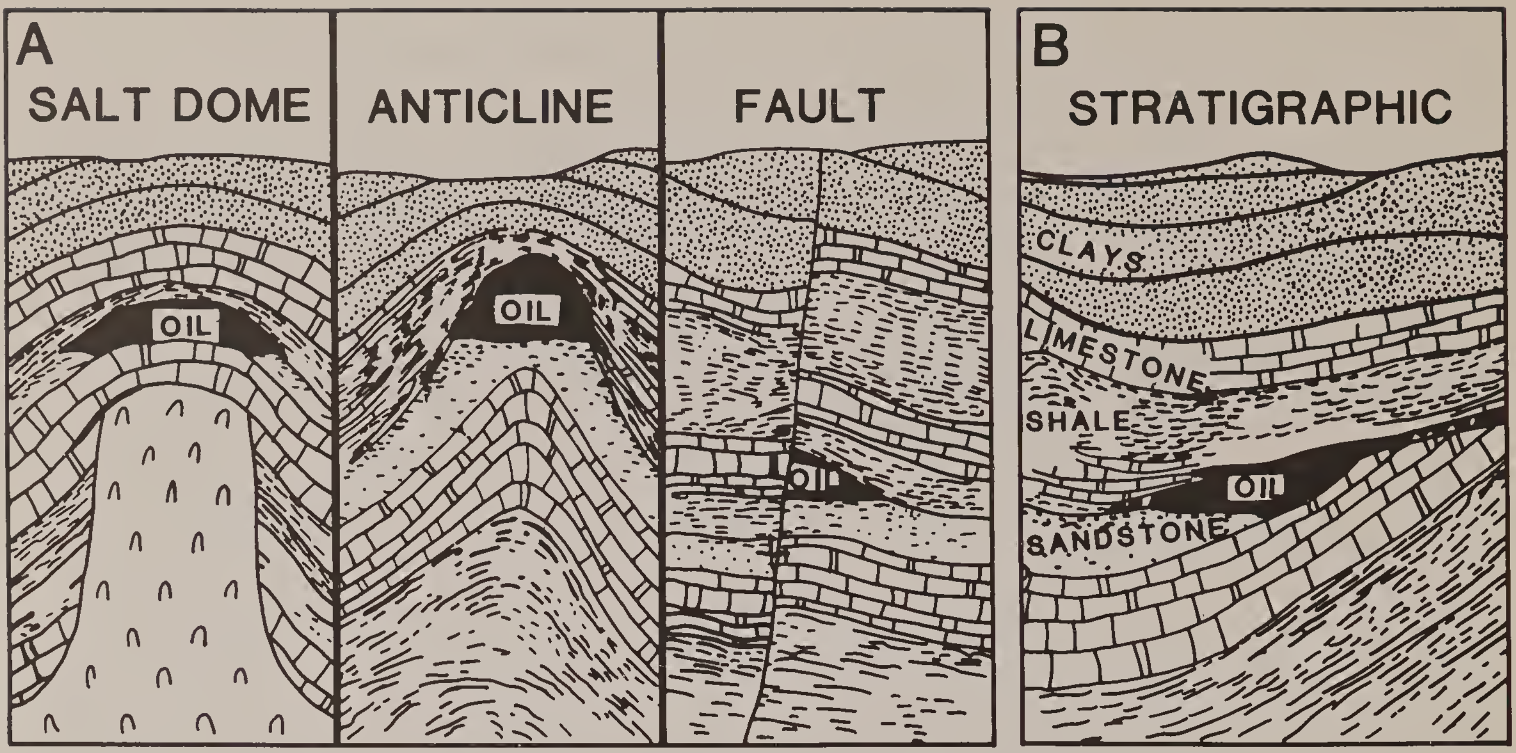


FIGURE 3: *A drillship on location on a Federal lease.*



A. STRUCTURAL TRAPS: created when porous rocks are faulted and folded, providing conditions suitable for the accumulation of petroleum.

B. STRATIGRAPHIC TRAP: formed by change in the porosity of a rock formation.

FIGURE 4: *Structural and stratigraphic traps*

3. *Environmental Record.* The environmental record for oil production on the OCS is impressive. Of about 5 billion barrels produced in the last 15 years, through 1986, only about 60,000 were spilled. (Statistics are for spills of 50 barrels or more.) Over 26,000 wells have been drilled, yet only one blowout occurred that resulted in significant amounts of oil reaching shore (off Santa Barbara, California, in 1969). Major steps have since been taken to require more stringent regulatory safeguards to promote even safer, pollution-free operations.

C. Geology of Petroleum Occurrence

Petroleum is found beneath the surface of the earth in many parts of the world both onshore and offshore. The key geologic requirements are (1) source rocks—organic-rich sediments which serve as a source of hydrocarbons, (2) a favorable thermal history to transform the organics into hydrocarbons, (3) reservoir rocks—porous and permeable rocks where the hydrocarbons can accumulate, and (4) an impermeable trapping mechanism (cap rock) to prevent the hydrocarbons from escaping.

Many scientists believe that most hydrocarbons are associated with rocks which were formed or deposited in a marine environment millions of years ago. Great volumes of organic and inorganic matter accumulated in these marine environments, and, as this material continued to accumulate, the weight of the overlying sedimentary pile created great pressure. This pressure, together with the heat of the earth, is postulated to have produced oil and gas from the organic matter. Scientists have proven that organic matter may be transformed into oil and gas by long, continued heat and pressure aided by bacterial action. Gradually, over long periods of time (millions of years), some of the oil and gas so formed migrated into porous and permeable rocks.

Porous and permeable rocks, such as sandstone, act as reservoirs for oil and gas if geologic conditions create a trap. If the trap results from the structure of the rock—such as a fold, salt dome intrusion, or fault—it is called a structural trap. If the trap simply results from a loss of porosity or permeability of the host rock which prevents further migration of the oil and gas, it is known as a stratigraphic trap. Often, the hydrocarbon migration is halted by a combination of structural and stratigraphic factors. (See Figure 4).

Oil is composed of two primary elements—hydrogen and carbon—combined in complex and various proportions. In crude oils, the amount of hydrogen varies from 10 to 15 percent and carbon from 80 to 89 percent, by weight. Oil, in its natural state or condition, also contains minor amounts of other chemicals—sulphur, nitrogen, metals. Oil is commonly associated with natural gas and saltwater within porous rocks. Gas is lighter than oil or water and tends to accumulate at the top of any reservoir. Oil, heavier than gas and lighter than water, accumulates below the gas and above the water.

D. Categories of Resources and Reserves

The DOI classifies the oil and gas potential of the offshore United States, including the OCS, into four major categories:

1. *Undiscovered economically recoverable resources* are resources outside of known fields estimated to exist in potential commercial accumulations. The presence of these resources is postulated on the basis of geologic, engineering, and economic inferences.

2. *Measured reserves* are proved reserves in known fields. They are reserves that are part of the economically identified resource that is estimated from geologic evidence supported directly by engineering measurements.

3. *Indicated reserves* are the additional quantities of crude oil and gas in known reservoirs (in excess of the measured reserves) which are believed to be economically recoverable by application of enhanced recovery techniques, whether or not such a program is currently installed.

4. *Inferred reserves* are quantities of oil and gas in known oil and gas fields that may be found by further drilling through producing layers and discovery of new pay zones.

Chapter 3. Leasing Framework

A. The 5-Year Program and Leasing Schedule

The preparation of the schedule for OCS oil and gas lease sales is governed by section 18 of the OCS Lands Act which was added to the Act by the Amendments of 1978. Before then, the scheduling of OCS lease sales was a discretionary action of the Secretary of the Interior who, in the early 1970's, issued the first 5-year OCS oil and gas leasing schedule. The advance issuance of a schedule is designed to increase the predictability of sales to facilitate planning by industry, affected States, and the general public.

Section 18 requires the Secretary of the Interior to prepare and maintain an OCS oil and gas leasing program. When approved, the leasing program consists of a schedule of lease sales for a 5-year period and policies pertaining to the size and location of sales and the receipt of fair-market value. The schedule indicates the timing and location of sales and shows the presale steps in the process which lead to the acreage actually offered.

To facilitate the scheduling of and preparations for sales in a 5-year program, the OCS is divided into planning areas. The 5-year OCS leasing program approved in July 1982 scheduled sales in 18 of 23 OCS planning areas. The new 5-year program, beginning in 1987, lists sales in 21 of 26 OCS planning areas. (See Figure 5, page 10.)

The leasing program that is adopted must be based on the following considerations, as set forth in section 18(a)(2) of the OCS Lands Act:

1. existing information concerning the geographical, geological, and ecological characteristics of such regions;
2. an equitable sharing of developmental benefits and environmental risks among the various regions;
3. the location of such regions with respect to, and the relative needs of, regional and national energy markets;
4. the location of such regions with respect to other uses of the sea and seabed, including fisheries, navigation, existing or proposed sealanes, potential sites of deepwater ports, and other anticipated uses of the resources and space of the outer Continental Shelf;
5. the interest of potential oil and gas producers in the development of oil and gas resources as indicated by exploration or nomination;
6. laws, goals, and policies of affected States which have been specifically identified by the Governors of such States as relevant matters for the Secretary's consideration;
7. the relative environmental sensitivity and marine productivity of different areas of the outer Continental Shelf; and
8. relevant environmental and predictive information for different areas of the outer Continental Shelf.

Based on a consideration of the above factors, the Secretary is required to adopt a 5-year program that reflects a proper balance among the potential for the discovery of oil and gas, the potential for environmental damage, and the potential for adverse effects on the coastal zone. The 5-year program must also provide for the receipt of fair-market value by the Federal Government for lands leased and rights conveyed.

In preparing a new 5-year program, the Secretary solicits comments from coastal State Governors and localities, the public, the oil and gas industry, environmental groups, affected Federal Agencies, and the Congress. Comments are requested at the start of the process of developing a new program and following the issuance of each of the three required versions of it: (1) the draft proposed program (60-day comment period); (2) the proposed program (90-day comment period); and (3) the proposed final program (60-day notification period following submission to the President and Congress). In addition to the steps required by section 18 of the OCS Lands Act, an environmental impact statement (EIS) on the 5-year program is also prepared. During the comment period on the draft EIS, public hearings are held in various coastal locations around the Nation.

The first 5-year leasing schedule prepared under the section 18 requirement was issued in June 1980. It included a total of 36 proposed sales from June 1980 to June 1985 (including five reoffering sales). This schedule was challenged in the U.S. Court of Appeals for the District of Columbia Circuit (court), but the court allowed leasing to continue. Following the guidance of the court, MMS formulated a new program beginning in 1982 which provided for 41 sales from 1982 to 1987. This program was also subject to litigation. In 1983, the court issued an opinion stating that the 1982 schedule was consistent with legal requirements. A new 5-year leasing program was approved on July 2, 1987.

Once a schedule is approved, it is reviewed periodically, and insignificant revisions, e.g., delays or cancellations of a sale, may be made without having to undergo the steps required to develop a new 5-year schedule.

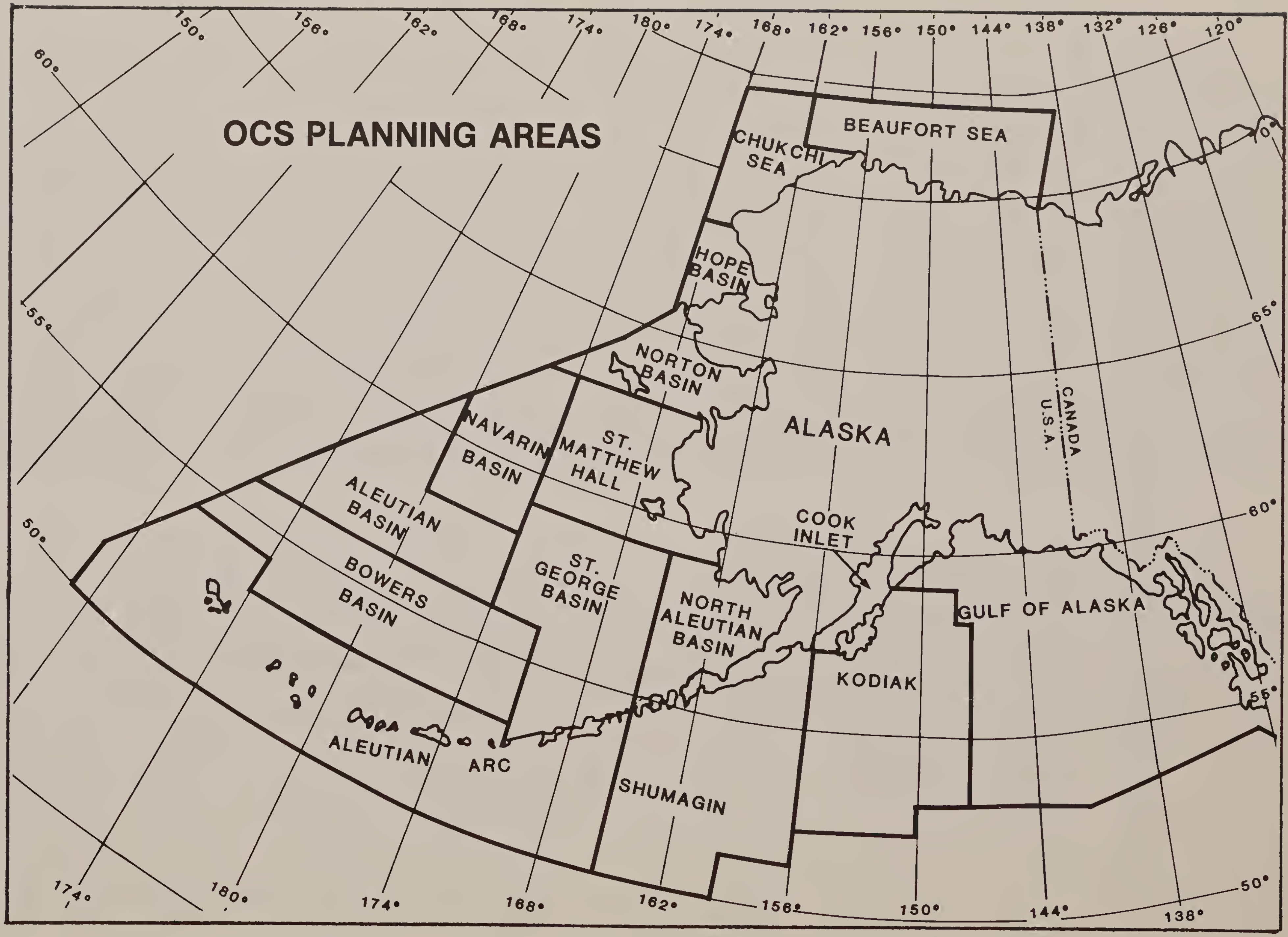
B. OCS Advisory Board

The OCS Advisory Board, established by the Secretary of the Interior in 1975, provides a formal mechanism for the DOI to receive advice and recommendations from various sources. It provides a forum for coastal States, various Federal Agencies, and public and private-sector representatives affected by or interested in minerals development of the OCS. The following three groups comprise the OCS Advisory Board: (1) the OCS policy committee, (2) the regional technical working groups (RTWG), and (3) the scientific committee. This three-part structure, as detailed in Figure 6, page 12, provides for specialized consideration of the policy, technical, and scientific aspects of the OCS program.

The policy committee of the board provides policy advice to the Secretary of the Interior and to other officials of the DOI, through the Director of the MMS. The advice provided concerns the performance of discretionary functions under the OCS Lands Act, including all aspects of leasing, exploration, development, production, and protection of the resources of the OCS. The Federal and State members of the committee serve until they resign or are removed; the discretionary members are appointed for 2-year terms and may be reappointed by the Secretary to serve additional 2-year terms. Committee appointments are made to effect a balance in terms of background, constituency, points of view, and functions of the committee.

The RTWG's advise the Director, MMS on technical matters of regional concern regarding prelease and postlease activities and on environmental studies requirements. The roles of the RTWG's range from providing public-participation opportunities for discussing technical issues and multiple-use concerns regarding offshore mineral activities to providing for technical review of the various MMS leasing-program documents and formulating environmental studies recommendations. Each RTWG is composed of representatives of the affected States, Fish and Wildlife Service (FWS), U.S. Coast Guard (USCG), Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), the

U.S. DEPARTMENT OF THE INTERIOR · MINERALS MANAGEMENT SERVICE

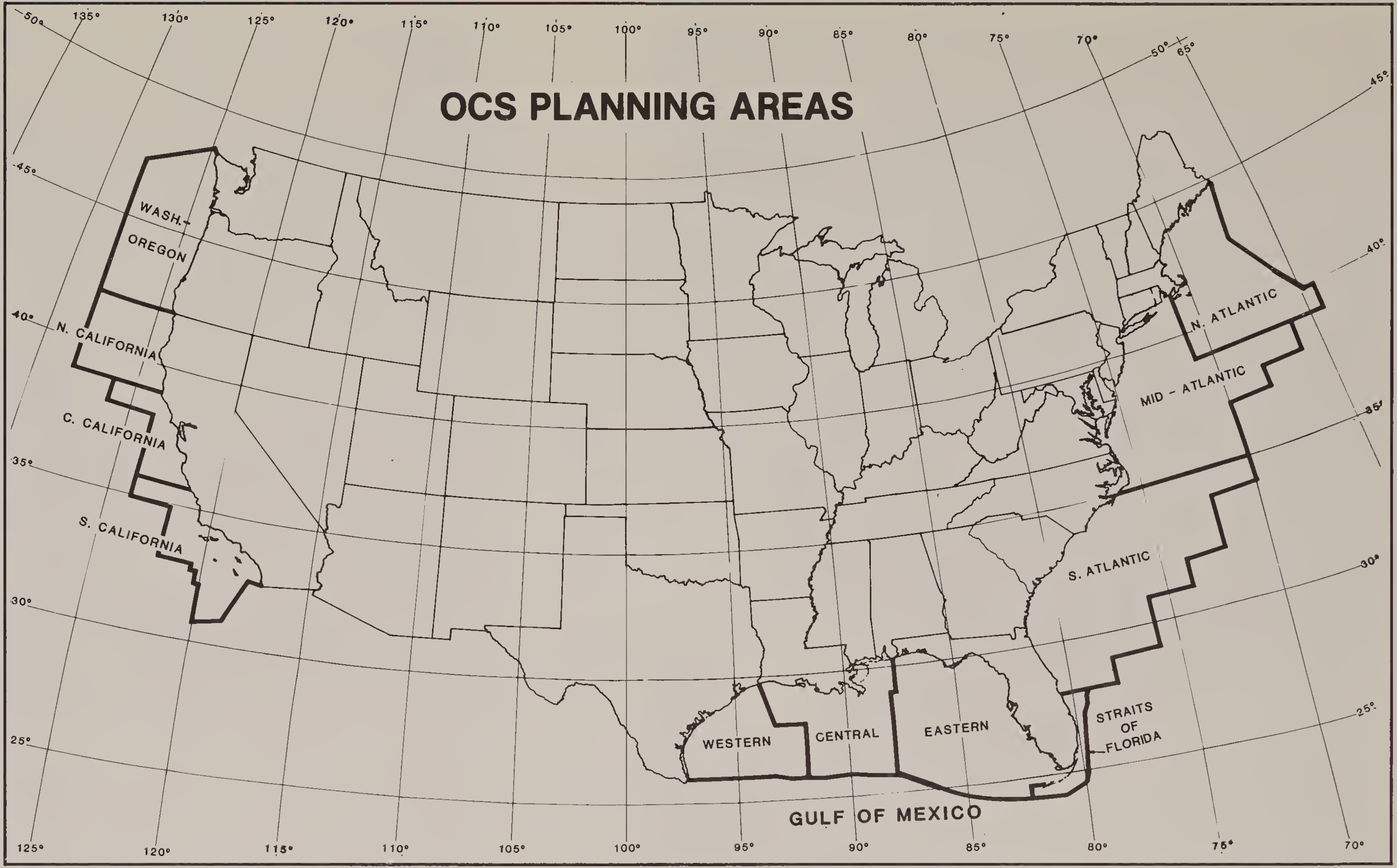


Boundaries and planning area limits depicted on this map are for initial planning purposes only and do not prejudice or affect United States jurisdiction in any way.

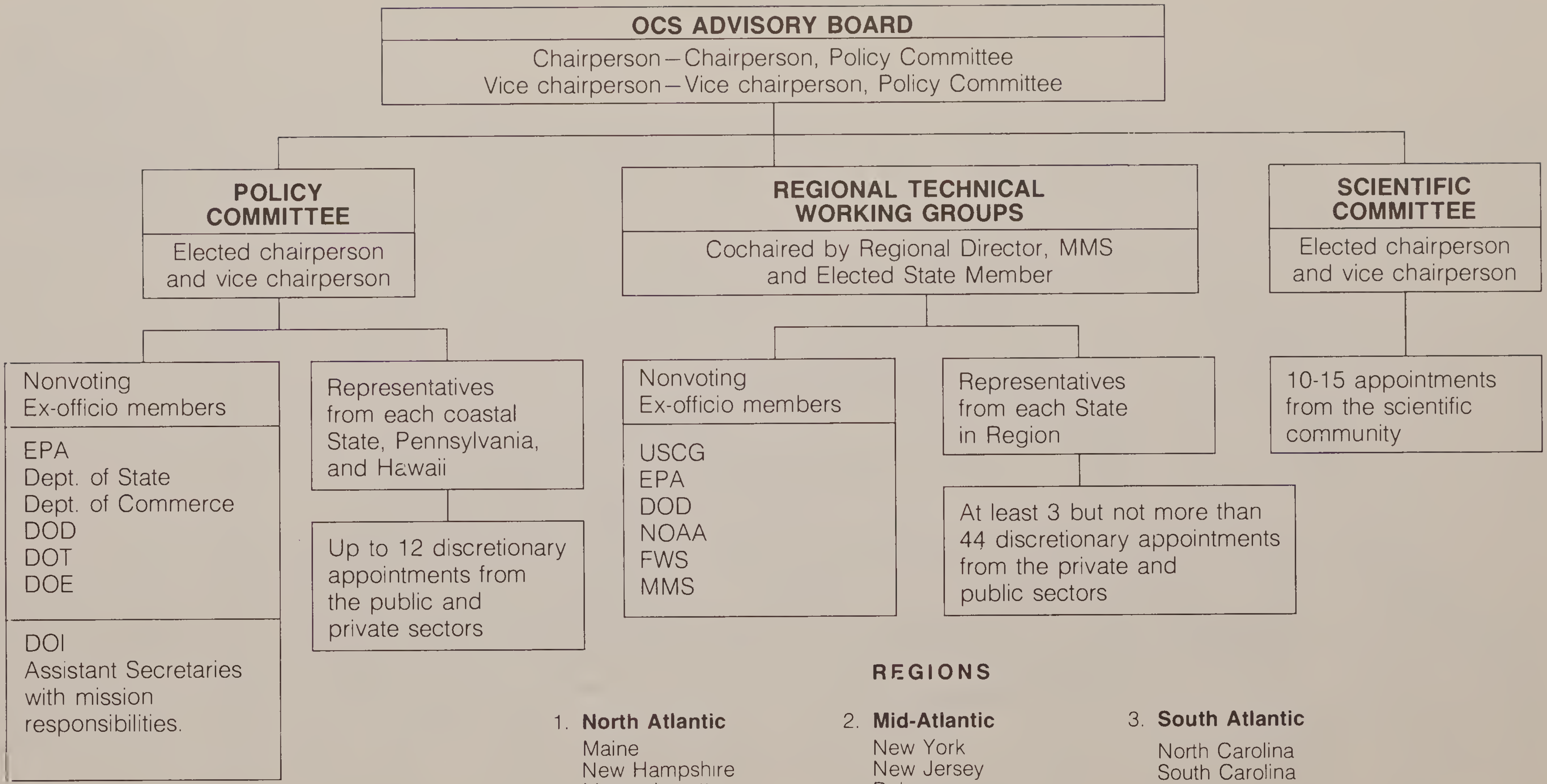
FIGURE: 5: OCS *planning areas.*

U.S. DEPARTMENT OF THE INTERIOR · MINERALS MANAGEMENT SERVICE

FIGURE: 5: OCS planning areas.



Boundaries and planning area limits depicted on this map are for initial planning purposes only and do not prejudice or affect United States jurisdiction in any way.


OCS ADVISORY BOARD
Chairperson—Chairperson, Policy Committee
Vice chairperson—Vice chairperson, Policy Committee
POLICY COMMITTEE
Elected chairperson and vice chairperson
REGIONAL TECHNICAL WORKING GROUPS
Cochaired by Regional Director, MMS and Elected State Member
SCIENTIFIC COMMITTEE
Elected chairperson and vice chairperson
Nonvoting Ex-officio members
EPA
Dept. of State
Dept. of Commerce
DOD
DOT
DOE
DOI
Assistant Secretaries with mission responsibilities.
Representatives from each coastal State, Pennsylvania, and Hawaii
Up to 12 discretionary appointments from the public and private sectors
Nonvoting Ex-officio members
USCG
EPA
DOD
NOAA
FWS
MMS
Representatives from each State in Region
At least 3 but not more than 44 discretionary appointments from the private and public sectors
10-15 appointments from the scientific community

REGIONS

1. **North Atlantic**
   - Maine
   - New Hampshire
   - Massachusetts
   - Rhode Island
   - Connecticut
   - New York
   - New Jersey
2. **Mid-Atlantic**
   - New York
   - New Jersey
   - Delaware
   - Pennsylvania
   - Maryland
   - Virginia
   - North Carolina
3. **South Atlantic**
   - North Carolina
   - South Carolina
   - Georgia
   - Florida
4. **Gulf of Mexico**
   - Florida
   - Alabama
   - Mississippi
   - Louisiana
   - Texas
5. **Pacific**
   - California
   - Oregon
   - Washington
6. **Alaska**
   - Alaska

FIGURE 6: OCS Advisory Board.

FIGURE 7: *MMS Director Bill Bettenberg gives briefing at OCS Policy Committee meeting.*

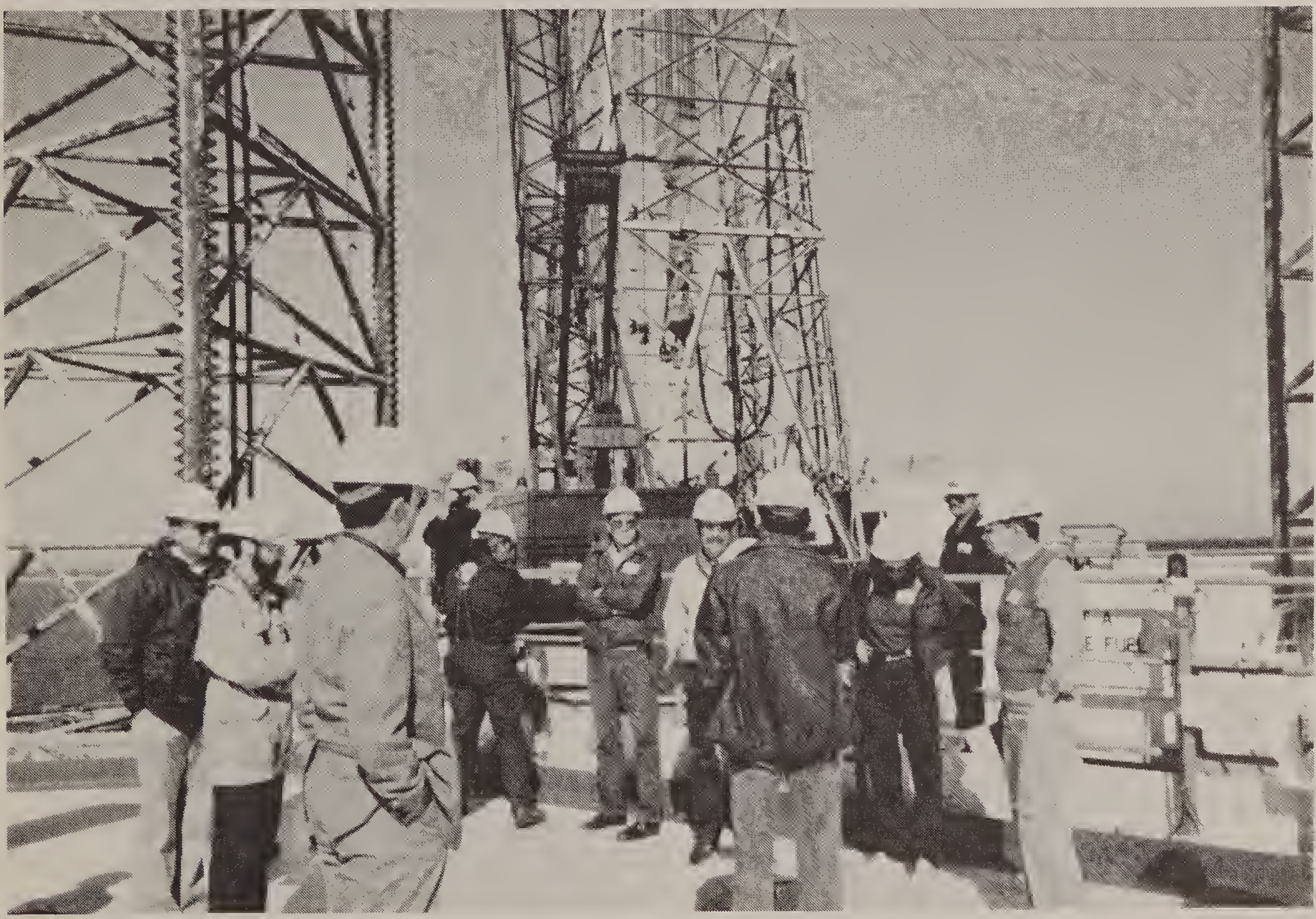


FIGURE 8: *RTWG field trip to drilling rig offshore Mobile, Alabama.*

Department of Defense (DOD), and public and private sector members appointed by the Secretary to effect balance in terms of points of view, expertise, and functions of the committee.

Finally, the scientific committee advises the Director, MMS on the feasibility, appropriateness, and scientific value of MMS's environmental studies program. The committee reviews the information produced by the program and may recommend changes in the program's scope, direction, or emphasis. The membership of the scientific committee reflects a balance of scientific and technical disciplines considered important to the management of the environmental studies program. Committee members are appointed for their scientific expertise, their ability to represent important elements of the program, and their reputation within their particular disciplines. Committee members are appointed by the Secretary of the Interior and serve 2-year terms. They may be reappointed to a limited number of consecutive, additional terms.

C. OCS Oil and Gas Information Program

The OCS oil and gas information program (OCSIP) was established in 1978 in compliance with a mandate of the OCS Lands Act, as amended. The amendments and subsequent regulations require that MMS make available to affected States, local governments, and other interested parties information on OCS oil and gas activities and related issues. This information is designed to assist State and local officials in planning for potential impacts resulting from possible offshore oil and gas exploration, development, and production activities. Information in these reports is derived from MMS data, industry, published reports, and other sources. Consultation with State and local officials regarding the acquisition of data and the information needs of these users is a continual process.

The OCSIP was a contractual effort from 1979 through September 1986. During that time, 67 reports were produced by two contractors. Currently, the production of these reports is entirely within MMS.

MMS has regularly published this information in two types of documents: regional summary reports and indexes, and these were recently reformated into one annual combination document for each OCS Region.

D. Environmental Studies

1. History. The purpose of the environmental studies program is to gather and develop information needed for predicting, assessing, and managing the possible effects of OCS oil and gas activities on the human, marine, and coastal environments. The studies program was initiated in 1973 with a series of projects which synthesized available information on the environmental and economic characteristics of various OCS leasing areas. The program grew rapidly with emphasis on benchmark studies. These studies were designed to describe the existing physical, chemical, geological, and biological components of OCS lease areas in a manner that would allow sound statistical comparisons to conditions in the area after the completion of oil and gas activities.

In 1977-78, program emphasis was shifted from benchmark studies. As a result of recommendations received from the OCS Advisory Board and ultimately the National Research Council, emphasis was placed on relating research efforts more directly to the specific resource-management decisions associated with the OCS leasing program. Since 1981, a growing emphasis in the program has been toward a better understanding of oceanographic processes that influence the long-term cumulative effects of OCS oil and gas development and production activities. Since 1982, increased emphasis has also been placed on synthesis and distribution of studies information.

Through FY 1986, over $425 million has been invested in OCS environmental and socioeconomic studies. These funds have been allocated to all four OCS Regions for regional studies and

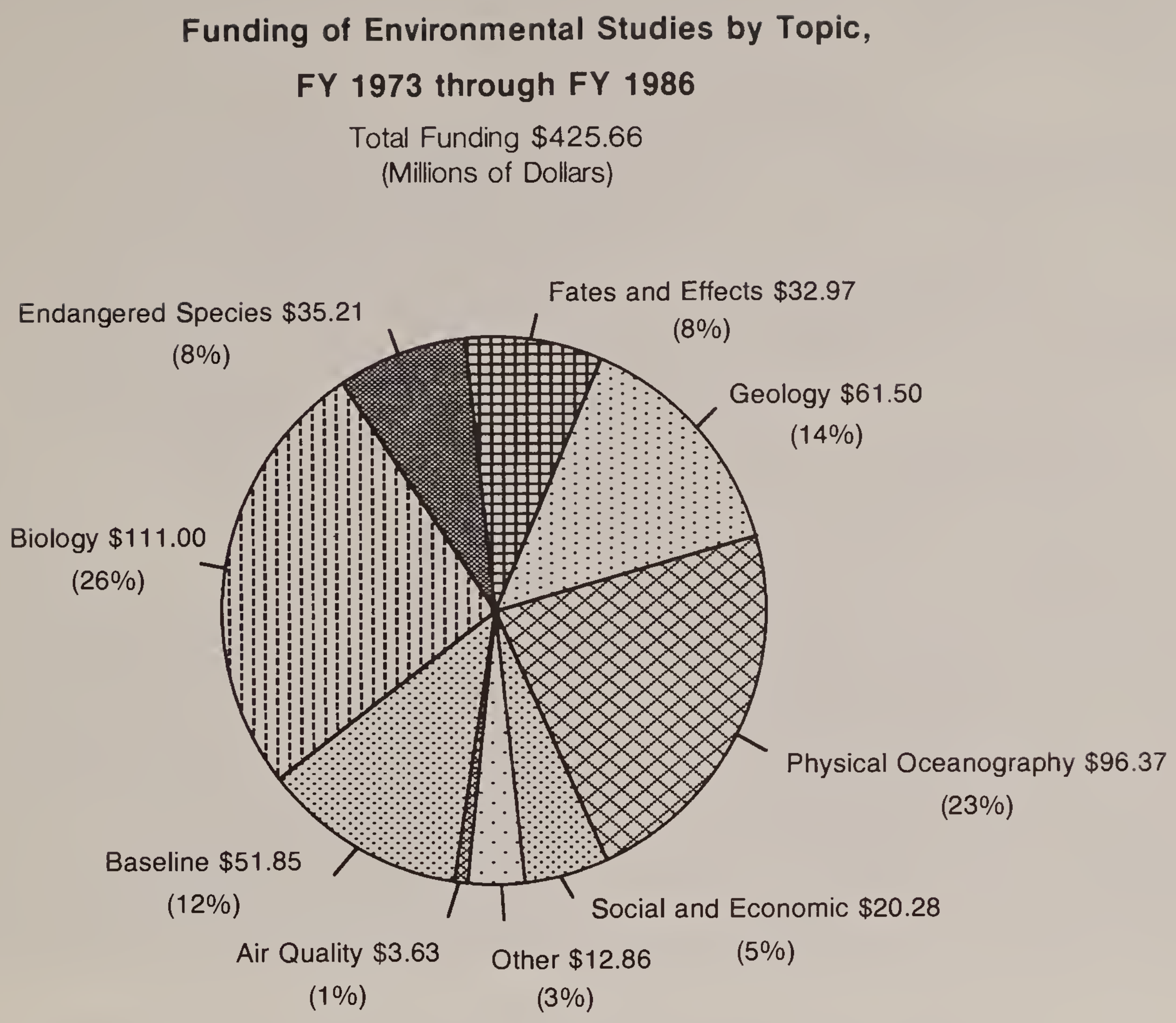


FIGURE 9: *Funding of environmental studies by topic, FY 1973 through FY 1986.*

to the Washington office to support studies of generic applicability. See Figure 9 which shows the funding of studies by category.

2. Regional Studies Plans and National Studies List. The assessment of information needs and the development of environmental studies are conducted annually. The process begins when MMS establishes and disseminates policy and guidance for the preparation of regional studies plans. This guidance includes interpretations of DOI policies and advice from the OCS Advisory Board's scientific committee. Regional studies plans are prepared by the regional offices with the assistance of the OCS Advisory Board's RTWG's and other local advisors. These plans include statements of local information needs, the regional perspective on the priorities of these needs, cost estimates, and a brief description of each proposed study.

Because the total cost of all studies nominated for funding during any fiscal year has historically exceeded available funds, ranking criteria were designed to establish the priority of each study on a national studies list. The current system is a modification of one developed jointly by the MMS and the Office of Management and Budget in 1979. It is based on consideration of the following items:

a. Importance of the information to the decisionmaker.
b. Date of the resource-management decision for which the study is designed.
c. Generic applicability of results or techniques from the study.
d. Status of the information.
e. Applicability of the study to issues of regional or programmatic concern.

Following submission of regional studies plans, the Washington office of MMS compiles the preliminary national

FIGURE 10: *A group of fish. Some environmental studies involve the identification of biological communities in an area of interest.*

studies list which includes all studies proposed for funding. The Washington office reviews the list and uses the ranking criteria to arrange the proposed studies in priority order. The national studies list incorporates generic studies and is then reviewed by the regional offices and returned to the Washington office for final approval. Each regional office then provides a schedule for procurement of the approved studies.

3. Effect and Application of Socioeconomic and Environmental Studies. The results of these efforts are used by the DOI in making decisions on the development of marine mineral resources. The data are useful in selecting leasing areas, analyzing environmental effects, formulating lease stipulations, and modifying leasing and operating rules and regulations. Environmental studies are also designed to monitor the effects of petroleum exploration or the effects of development and production activities. If potential adverse effects are discovered by these monitoring efforts, appropriate measures may be taken to mitigate or change the expected effects by amending and modifying OCS regulations or by issuing Notices to Lessees and Operators (NTL). In addition, when an environmental study indicates a need to further protect the environment, new or changed stipulations may be imposed on future leases in a specific geographical area.

E. Collection of Geological and Geophysical Data

As indicated earlier, the only positive way of knowing whether an area contains petroleum is to drill one or more wells; however, a number of geophysical and geological techniques have been developed and refined over the years to assist in the prediction of whether there may be petroleum in an area. With these techniques, attempts are made to predict: (1) whether the requisite geological conditions for petroleum occurrence exist, (2) where the reservoirs are located, and (3) the size of the reservoirs and the probable volumes of petroleum that they may contain.

FIGURE 11: *A bowhead whale. An Alaska regional study explored the effects of oil and gas activities on this endangered species.*

Most of the information used by both the Federal Government and industry to estimate or predict the oil and gas potential of an area is acquired by geophysical and, to a lesser extent, geological surveys. A considerable amount of this information is collected, under MMS permits, by oil companies or by specialized data-collection firms that sell or furnish the information to oil companies and to the DOI. Industry uses these geophysical and geological data to determine which areas have potential for oil and gas production. These areas are then recommended to the MMS in response to the call for information and nominations for a specific leasing area. The DOI uses the information to identify a general sale area for resource evaluation and for post-sale management. The MMS also acquires data that has been collected for scientific research activities for which an approved permit or filing of notice is required.

1. Geophysical Surveys. The primary geophysical survey method used in petroleum exploration on the OCS is seismic reflection. Seismic reflection is the measurement of the two-way travel time of seismic waves from the ocean's surface to various rock formations within the earth, as shown in Figure 12. Information is collected about the thickness and depth of various formation or strata of rock and the probable location and existence of structural features such as reefs, salt domes, folds and faults, and stratigraphic traps. Other geophysical surveys include measurements of the earth's gravitation, magnetic, and electric fields.

Information about shallow layers identifies potentially hazardous conditions such as surface faulting, potential slope failure areas, or shallow gas accumulations. Information about the deeper layers is used primarily for evaluating the petroleum resource potential. Both types of information are necessary in the choice and evaluation of drilling platform locations.

2. Geological Surveys. Geological surveying on the OCS consists of bottom sampling, shallow coring, and deep stratigraphic testing. These data are useful in determining the general geology of an area and whether the necessary types of rocks exist for petroleum formation and accumulation.

In totally unexplored areas, prior to a lease sale, deep stratigraphic test (DST) wells, commonly known as continental offshore stratigraphic test (COST) wells, are drilled (usually by a combine of companies) to obtain information on the subsurface geology of an area where geophysical data or other evidence indicates hydrocarbons may exist. These test wells may be more than 20,000 feet deep. Their depths and locations are controlled by permits issued by the MMS.

When the geophysical and stratigraphic evidence are combined, the possible presence and volume of petroleum can be predicted, but exploratory drilling is still required to determine whether or not oil is actually present.

A geological report is prepared by MMS for each proposed lease-sale area and generally includes the following: general geology of the planning area, hydrocarbon potential, environmental geology, and potential geologic hazards. Portions of this report are included in the EIS that is prepared for the proposed lease-sale.

F. Area of Hydrocarbon Potential

The phrase, "area of hydrocarbon potential," is defined as an area which has the primary geologic characteristics favorable for the generation and the accumulation of hydrocarbons. The area of hydrocarbon potential within a given planning area is determined for each proposed lease sale in an internal (MMS/DOI) document that is completed before the issuance of the call for information and nominations. This determination does not include economic or technological considerations. The criteria used in making a hydrocarbon potential determination are the sediment thickness, existence of source and reservoir rock, thermal history, and the existence of hydrocarbon trapping mechanisms. The area of hydrocarbon potential usually appears on the call for information and nominations map for each proposed lease sale and helps serve as a basis for focusing comments in response to the call.

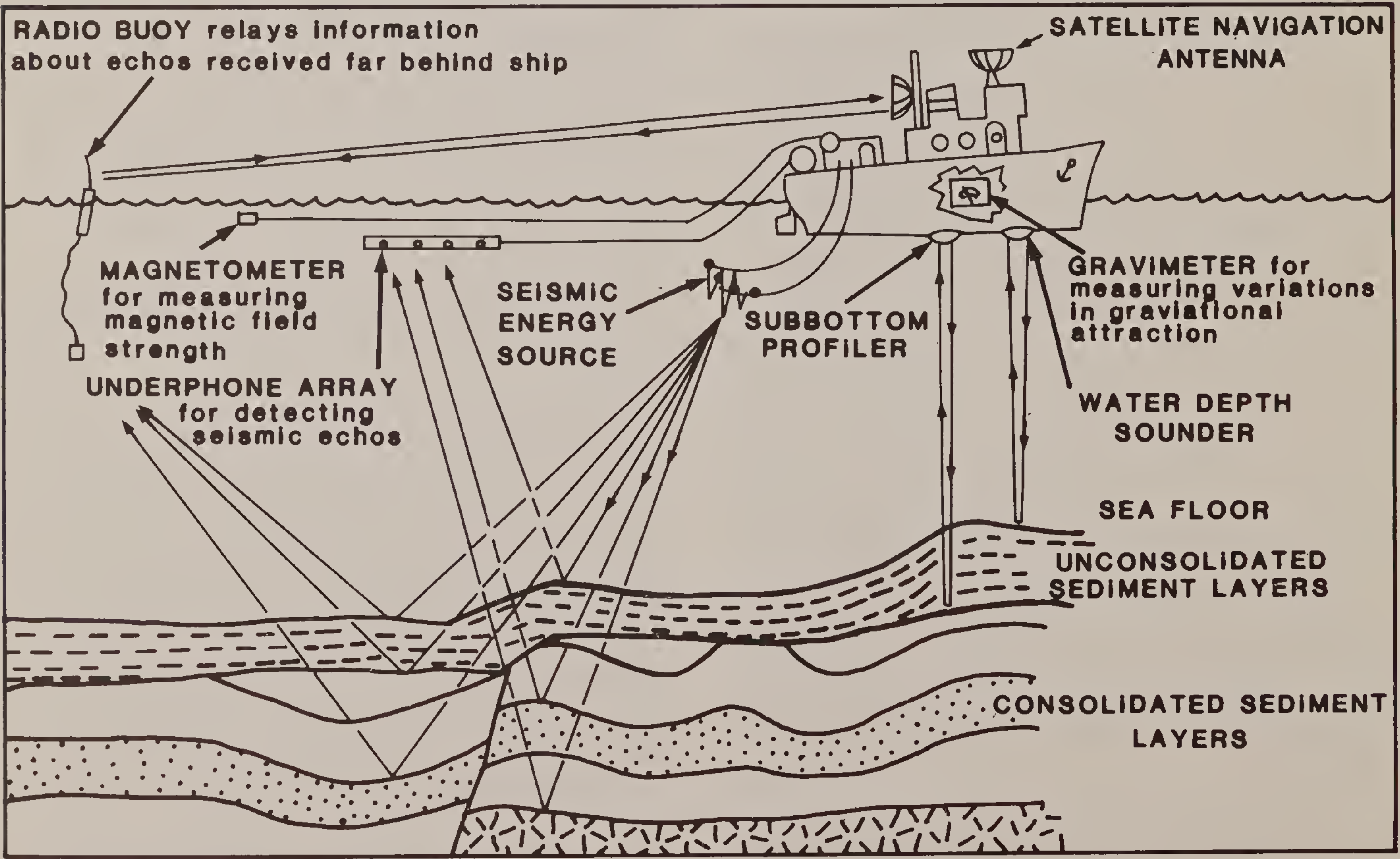

RADIO BUOY relays information about echos received far behind ship
SATELLITE NAVIGATION ANTENNA
MAGNETOMETER for measuring magnetic field strength
SEISMIC ENERGY SOURCE
SUBBOTTOM PROFILER
GRAVIMETER for measuring variations in gravitational attraction
UNDERPHONE ARRAY for detecting seismic echos
WATER DEPTH SOUNDER
SEA FLOOR
UNCONSOLIDATED SEDIMENT LAYERS
CONSOLIDATED SEDIMENT LAYERS

FIGURE 12: *Schematic showing geophysical survey methods.*

Chapter 4. Leasing Procedures for the OCS

A. Call for Information and Nominations/Notice of Intent to Prepare an Environmental Impact Statement

After adoption of a 5-year leasing program, the usual first step in the sale process for an individual area is to publish in the *Federal Register* a call for information and nominations and a notice of intent to prepare an EIS. The entire process from the call to the sale may take two or more years. Some proposed sale areas may include an additional first step—a request for industry interest to solicit comments and interest in the specific area. All subsequent steps in the leasing process are described in the following pages and are shown in Figure 13.

The call serves several functions: it informs the public of the area under consideration for oil and gas leasing; it solicits comments from States and all interested parties on areas or subjects that should receive special attention and analysis; it may show the area of hydrocarbon potential; it invites potential bidders to indicate areas and levels of interest; and it invites the public and affected States to address issues that relate to potential conflicts between future oil and gas activities and the States' interests such as the States' approved coastal zone management programs, fishing, tourism, and other concerns.

This initial information-gathering step is important for ensuring that all interests and concerns are communicated to the DOI for future consideration in the decision-making process. Comments are usually due 45 days after the call is published.

The MMS uses the information submitted in response to the call for several purposes. Expressions of industry interest are used to further define the areas of potential for oil and gas development. Comments on possible environmental effects and multiple-use conflicts are used to analyze environmental conditions in and near the call area. Comments are also used to understand and consider potential conflicts between offshore oil and gas activities and the States' interests and to develop lease terms and conditions to assure safe offshore operations and to mitigate offshore and onshore impacts. These considerations allow a preliminary determination of the potential advantages and disadvantages of oil and gas exploration and development to the adjacent area and the Nation. Key decisions can therefore be made early in the planning process to resolve conflicts by deleting from consideration for leasing those areas where there is sufficient information to justify that deletion.

At the time information is solicited for leasing OCS areas within 3 miles of the seaward boundary of any coastal State, the Secretary of the Interior provides, upon request of the Governor of that State, geographical, geological, and ecological information relevant to those areas. After determining which areas will be further considered for leasing, DOI determines in consultation with the Governor(s) of the affected State(s) those areas (if any) that may contain potential oil or gas pools or fields underlying both OCS lands and lands subject to the jurisdiction of the State(s).

The notice of intent to prepare an EIS officially announces the initiation of EIS scoping and thereby invites public participation in determining the significant issues, mitigating measures, and alter-

OCS Leasing Procedure

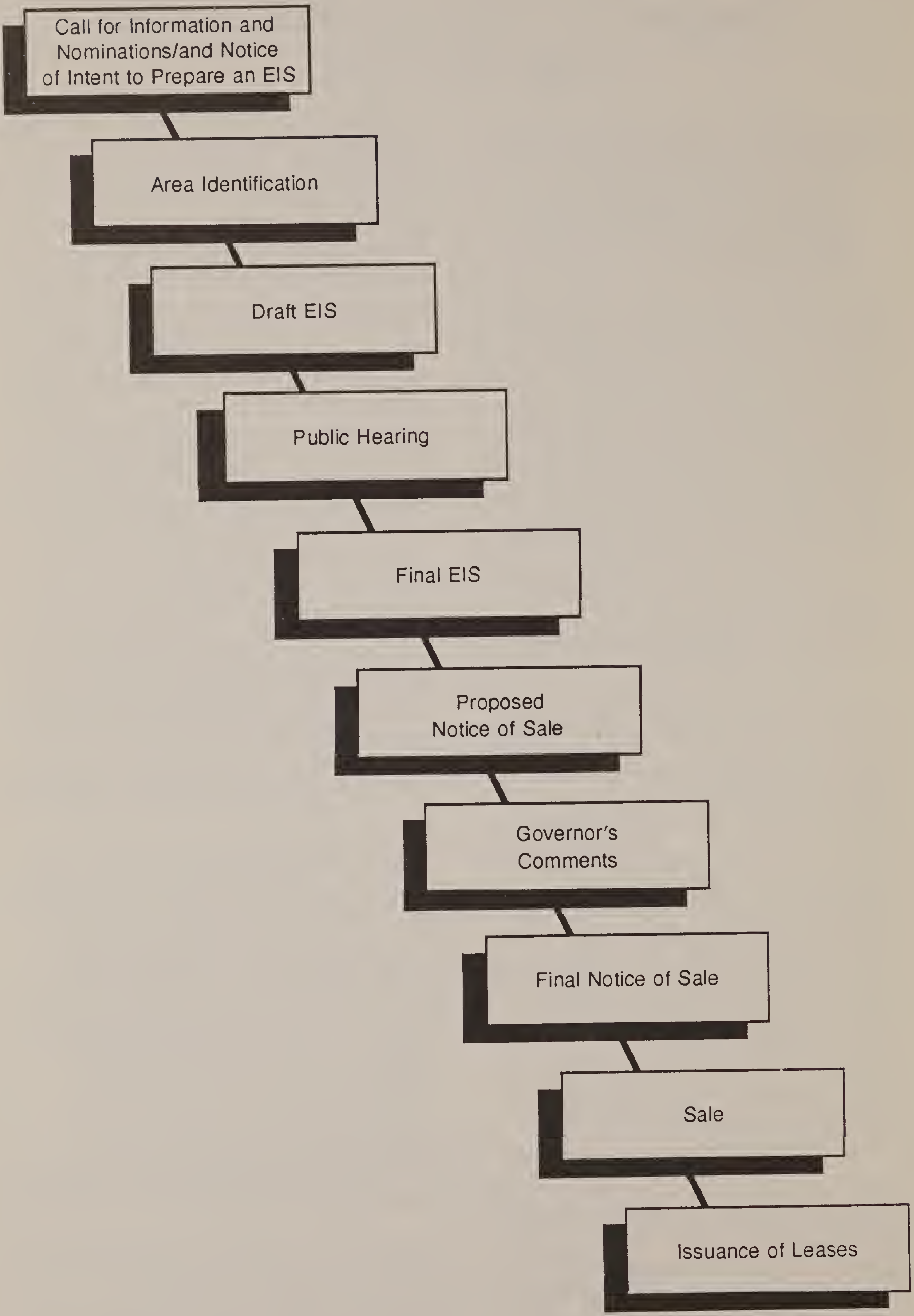


FIGURE 13: *OCS Leasing Procedure.*

FIGURE 14: *A scoping meeting in Eureka, California, for lease sale 91 provided an opportunity for public participation in the EIS.*

natives to the proposed action to be analyzed in the EIS. The scoping process involves Federal, State, and local governments and all other interested parties.

B. Area Identification

After the comment period for the call for information and nominations closes, the MMS develops and evaluates options for area identification. This step involves identifying blocks which should be studied further and considered for leasing. (For administrative purposes, MMS has divided the ocean area into roughly 3-mile squares called "blocks." Parts of blocks may be combined in different ways to create a tract for leasing purposes.) In general, all blocks which may have hydrocarbon potential or are of interest to industry are included in the proposal for further study if they can meet an initial balancing test between energy values and potential environmental harm or conflict with other uses of the seabed. The intent is to consider environmental concerns and to allow industry wide latitude for making its investment decisions and testing various exploration strategies. Thus, DOI attempts in the area identification step to develop proposals which include as much acreage with leasing and hydrocarbon potential as possible. At the same time, DOI strives to resolve as many issues as possible at this step in order to prevent unnecessary conflicts throughout the remainder of the presale process. Early resolutions serve to reduce the level of public controversy and help industry and the Federal Government (and ultimately the taxpayer) focus on promising acreage and avoid needless expense.

In identifying the area to be studied in the EIS, consideration is given to the level of industry interest; comments of States, Federal Agencies, environmental groups, and other interested parties; geologic and geophysical information; historic bidding, exploration, and drilling data for the area; environmental conditions and effects of development; and other economic and social considerations. At this stage, areas are deleted from further study where both significant multiple-use conflicts may exist and the potential for hydrocarbon discovery is low.

The area identified is the area analyzed in the EIS—the next step in the leasing process.

Public notice of the area identified is usually made through a press release and a fact sheet that includes a map of the proposed sale area showing the areas proposed to be included in the sale.

C. Draft Environmental Impact Statement

The MMS procedures include preparing an EIS and holding public hearings before the Secretary of the Interior decides whether or not to hold any OCS lease sale proposed on the 5-year oil and gas leasing schedule.

These procedures are included in the leasing process to comply with the requirements of the National Environmental Policy Act (NEPA). The NEPA requires the preparation of an EIS before the conduct of any major Federal action which could significantly affect the quality of the human environment and specifies the basic information that the EIS shall include. The NEPA also established the Council on Environmental Quality CEQ as the Agency responsible for ensuring that other Federal Agencies comply with the Act.

Regulations issued by the CEQ in 1978 and revised in 1980 establish uniform guidelines for implementing the procedural provisions of NEPA. The CEQ regulations include a procedure known as scoping—a process of identifying the scope and significance of important issues associated with a proposed Federal action and alternatives to that action through coordination and consultation with Federal, State, and local governments; the public; and any interested individual or organization before pursuing development of an EIS. Scoping helps to ensure maximum consideration of the environmental issues and of the opinions of local citizens and others about these issues. It also helps to focus the analysis in the EIS on significant issues and alternatives and to eliminate issues which are not significant.

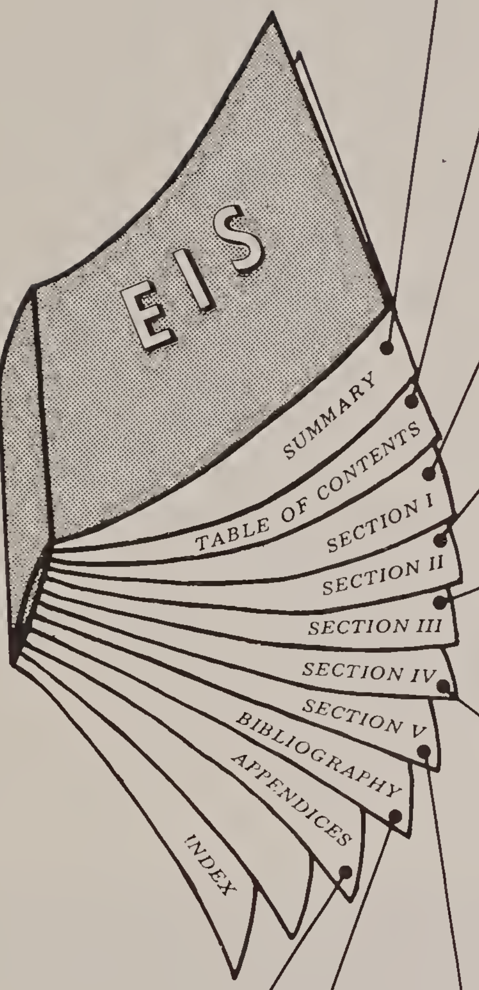
Additionally, information gathered through the scoping process includes that received from agencies in response to the requests for data taken from the call for information and nominations. This information, as well as information gathered by the studies program, is reviewed by a multidisciplinary team of staff analysts to identify the major issues and alternatives to be addressed in the EIS that is prepared in the appropriate MMS regional office.

The EIS includes: a description of the lease sale proposal including the oil and gas resources estimated to be found and a projection of the exploration and development activity that might occur; reasonable alternatives to the leasing proposal; a description of the existing environment; a detailed analysis of possible effects on the environment, including socioeconomic and cumulative effects; a description of the assumptions upon which the analysis is based; potential mitigating measures; any unavoidable adverse environmental effects; the relationship between short-term uses and long-term productivity; any irreversible or irretrievable commitment of resources; and the records of consultation and coordination with others in preparation of the document.

The analysis of possible effects on the environment includes an analysis of the risks of potential oil spills as estimated by the use of an oil-spill risk analysis model. The model provides a measure of the likelihood of an oil spill as well as the likely trajectories of a spill in relation to recreational and biological resources.

The EIS may also describe the technology assumed or hypothesized as necessary for exploration, development, and production of the proposed lease-sale area. See Figure 15 which illustrates the content of an EIS.

EIS Content



SUMMARY: A recap of information in the EIS.

TABLE OF CONTENTS: The TOC is a detailed listing of page numbers for all material in the EIS.

SECTION I--PURPOSE OF AND NEED FOR THE ACTION: Section I explains the proposed action and the offshore leasing program. This section also includes a summary of the scoping efforts for the leasing proposal.

SECTION II--ALTERNATIVES INCLUDING THE PROPOSED ACTION: This section presents the environmental effects of the proposal and the alternatives in comparative form, thus providing a clear basis for a choice among options by the decisionmaker and the public. Section II also includes potential mitigating measures for the leasing proposal.

SECTION III--DESCRIPTION OF THE AFFECTED ENVIRONMENT: This section describes the area (people--communities--mammals--birds--fish--air--water--geology--endangered species) which could be affected by the leasing proposal. Information presented in Section III focuses on major issues identified as a result of the scoping efforts and analyzed in Section IV.

SECTION IV--ENVIRONMENTAL CONSEQUENCES: Section IV describes the possible environmental effects of implementing the leasing proposal or the alternatives to the proposal. This section also contains a discussion about the assumptions that form the bases for environmental effects analyses (e.g., information about oil-spill-risk analyses). The scientific and technical information in Section IV forms the basis for the comparison of alternatives in Section II.

APPENDICES: Appendices are materials prepared in conjunction with the EIS or materials which support EIS descriptions or analyses.

SECTION V--CONSULTATION AND COORDINATION: This section includes a list of those contacted prior to and during the preparation of the EIS. It also contains a listing of the contributing authors and supporting staff members.

BIBLIOGRAPHY: An alphabetical listing, by author and--or agency, of references and literature used to prepare the EIS.

FIGURE 15: *EIS content.*

Pertinent published and unpublished investigations from academic and other institutions and organizations and from other Federal and State agencies are reviewed during the preparation of the draft EIS. When the draft EIS is complete, it is filed with EPA and made available to the public for review. A notice of its availability is published in the *Federal Register.* The period for comment on the draft EIS is usually 60 days from the day it is filed with EPA.

D. Public Hearing

No sooner than 30 days after publication of the draft EIS but within the 60-day comment period, one or more public hearings are held in the vicinity of the proposed lease-sale area for the purpose of receiving comments on the draft EIS. At least 30 days before the public hearing, the time and location of the hearings are announced in the *Federal Register.* So that it may receive a broad array of input, DOI invites written or personal testimony from environmental organizations; the academic community; Federal, State, and local government representatives; industry; and the public. Oral and written comments are then considered in the preparation of the final EIS.

E. Final Environmental Impact Statement

The comments and data received through the public hearings and the official review process are analyzed along with any newly acquired information and, when appropriate, are incorporated into a final EIS. At this stage, new stipulations or other measures to protect areas, or biological or other types of resources, may be included after comments from affected States are reviewed. In some cases, new deferral options are developed and incorporated into the final EIS. Usually about 3 to 5 months after the public hearing, the final EIS is filed with EPA and made available to the public. Notice of its availability is published in the *Federal Register.*

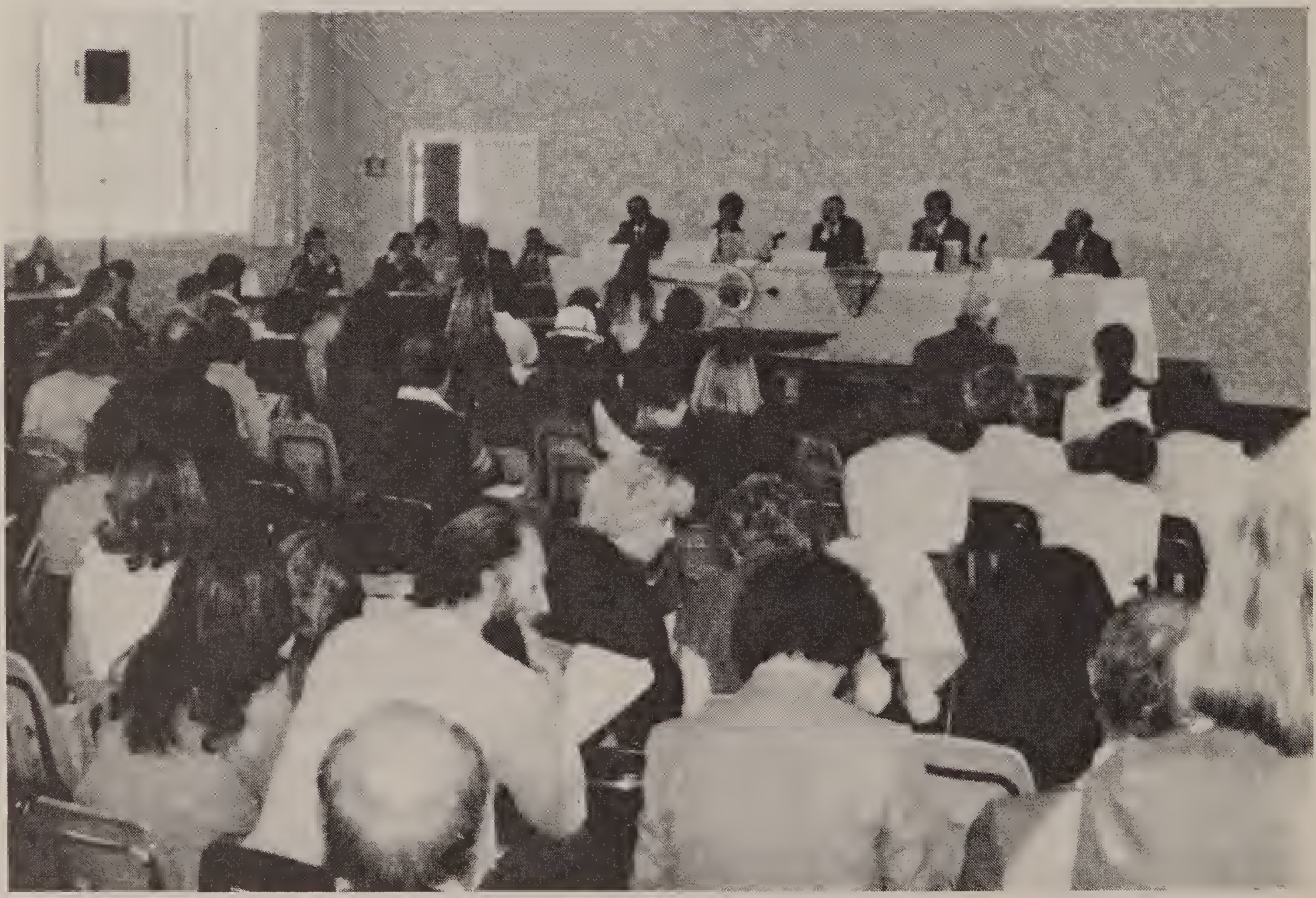


FIGURE 16: *A public hearing in San Francisco, California, provides interested parties an opportunity to comment on a draft EIS.*

F. Proposed Notice of Sale

The proposed notice of sale is the public announcement of a proposed sale and is issued upon the decision of the Assistant Secretary for Land and Minerals Management to proceed with the sale. It is issued after the final EIS is filed with EPA and after additional decision materials have been prepared, including a secretarial issue document (SID). The SID summarizes the conclusions of the EIS and identifies and analyzes issues not included in the EIS but associated with the sale. These issues may relate to State recommendations, environmental concerns, economic benefits/costs, operational or legal constraints, multiple-use conflicts, or any other subject of concern. The SID also identifies potential post-lease coastal zone consistency conflicts and evaluates whether any prelease measures are available or appropriate to resolve them. Options for decision are evaluated, taking into account environmental, economic, legal, technical, and other factors. On the basis of all these materials, decisions are made on the proposed terms and conditions of the sale. An attempt is made to balance the various economic, social, and environmental issues and questions raised by the sale and any concerns raised by the affected States as well as other Federal Agencies and the public.

The proposed notice of sale, usually available for public comment about 1 month after the final EIS is filed with EPA, identifies the blocks that are available for lease, stipulations and other restrictions which would help mitigate the effects on the environment of activities conducted after the sale, proposed bidding systems and lease terms, and other pertinent information useful to interested parties and potential lessees. Any member of the public may submit comments in response to a proposed notice of sale.

A notice of availability of the proposed notice of sale is published in the *Federal Register.* It informs the public where copies of the actual proposed notice of sale may be obtained.

A proposed notice of sale describes bidding systems to be used—typically a variable cash bonus subject to a minimum bid requirement, with royalty on production fixed at rates of 12½ or 16⅔ percent. (The difference in percentage rates is usually linked to water depths—the deeper the water, the lower the rate to encourage exploration.) DOI has also tested different systems, primarily in response to the OCS Lands Act Amendments of 1978 which required experimentation with alternative-bidding systems for a 5-year period that terminated in September 1983. In addition to cash-bonus bidding with fixed royalty rates as high as 33⅓ percent, the following systems were tested: cash-bonus bidding with fixed net profit share rates, cash-bonus bidding with fixed sliding-scale royalty rates, and a variable royalty rate bid with fixed cash bonuses.

Besides describing the bidding systems, a proposed notice of sale also describes the length of the primary lease term for blocks to be offered. The OCS Lands Act provides for issuing leases for an initial term of 5 years, but they may be and have been granted for a term of up to 10 years when it is determined that longer terms are necessary to encourage exploration due to unusually deep water or other adverse conditions. The proposed notice also serves as the basis for the next step of consultation with the Governors of affected States.

G. Governors' Comments

Governors of affected States are sent copies of the proposed notice along with a letter explaining the rationale for the decisions made in determining the structure of the proposed notice. Once the proposed notice of sale is sent, the Governors have 60 days to submit comments on the size, timing, and location of the proposed lease sale. These comments provide a framework for the discussion and resolution of any remaining concerns the States may have on a particular sale.

H. Final Notice of Sale

After receiving comments from the Governors of the affected States, a final decision memorandum which analyzes all issues is prepared for the Secretary. Governors' recommendations on the size, timing, and location of a proposed lease sale must be accepted if the Secretary determines that they provide for a reasonable balance between the national interest and the well-being of an affected State. The rationale for the determination to accept or not accept recommendations must be communicated to the Governors in writing.

If the Secretary decides to proceed with the lease sale after consideration of the Governors' comments and any pertinent new information, the Secretary issues a final notice of sale. The final notice of sale includes the date, time, and place of the sale; blocks available for lease; stipulations and other mitigating measures; bidding systems and lease terms; and other pertinent information. In addition, a notice of leasing systems is issued that more fully describes the proposed bidding systems for the sale. Both notices are published in the *Federal Register* at least 30 days before the sale date.

I. Sale

No less than 30 days after the notice of sale is published in the *Federal Register*, sealed bids submitted by qualified bidders are publicly opened and read. Lease sales are open to the public and are conducted by the appropriate Regional Director, usually in the city in which the OCS regional office is located. Qualified bidders may submit bids on any block or bidding unit listed in the final notice of sale. Each bid submitted must contain payment of one-fifth of the amount of the cash bonus bid. The minimum acceptable bid for any block is stated in the final notice of sale. The bids are checked for technical and legal adequacy on the day of the public reading to determine the highest valid bid. They are also evaluated to determine if the bidder has complied with all applicable regulations.

FIGURE 17: *Industry representatives attend Gulf of Mexico lease sale 102 in 1985.*

FIGURE 18: *Bids for leases are processed and tallied by MMS personnel.*

The Federal Government reserves the right to reject any or all bids and the right to withdraw any block from the sale.

J. Decision to Accept or Reject Bids

Immediately after the lease sale at which bids are read publicly, MMS begins the process of determining whether a bid can be accepted and a lease issued. Acceptance of a bid is primarily based on the receipt of fair-market value.

On February 22, 1983, DOI adopted new procedures to evaluate bids received in OCS lease sales to assure receipt of fair-market value. The new bid-adequacy system places increased reliance on competition in the free market through implementation of a two-phase process. Subsequently, in February, March, and July 1984 and in May 1985 modifications in the procedures were made as a result of assessing their use in OCS lease sales.

Phase 1 of a two-phase process is conducted on a tract-by-tract basis and is normally completed within 3 days of the bid opening. It is designed to accept those high bids where the competitive market forces can be relied upon to assure receipt of fair-market value or where MMS data indicate the tract does not contain an economically viable prospect.

Those high bids not accepted in phase 1 receive further evaluation in phase 2. For those high bids on blocks with potentially viable prospects, MMS geologists, geophysicists, economists, and petroleum engineers prepare detailed estimates of the economic value of the oil and gas resources on each tract in phase 2. The high bids are then compared to MMS estimates of resource economic values. Most analyses are undertaken based upon data available at the time of the sale; however, additional geophysical and geological data may be obtained after the sale at the discretion of the Regional Director.

FIGURE 19: *Gulf of Mexico Regional Director J. Rogers Pearcy publicly reads bids at a lease sale in 1986.*

The bid adequacy recommendations developed in phase 2 are usually completed within 3 weeks, except in the Gulf of Mexico where more time may be required because of the number of blocks requiring evaluation. The regulations state that the authorized official (the Regional Director) must accept or reject all bids within 90 days after the date on which they are opened. Any bid not accepted within the prescribed time is considered rejected.

Before any bid is accepted, the results of the sale are reviewed by the Attorney General and the Federal Trade Commission to determine if awarding a lease would create a situation inconsistent with the antitrust laws.

K. Issuance of the Lease

When a bid is deemed acceptable and the decision is made to award the lease, the remaining four-fifths of the bonus bid and the first year's annual rental become due. Upon receipt of an electronic funds transfer (EFT) to the U.S. Treasury and properly executed lease forms, the Regional Director issues a lease to the successful bidder(s). Leases usually are effective the first day of the month following the date they are signed by an MMS official.

The oil and gas mineral lease grants the right to explore, develop, and produce oil and gas, for a specific term and from a specific tract of submerged OCS land. The tract covers an area not exceeding 5,760 acres or 2,304 hectares, unless it has been determined that a larger area is necessary to comprise a reasonable economic production unit. If a discovery is made within the initial term of the lease, the lease is extended for as long as oil and gas may be produced in paying quantities or approved drilling operations are conducted. The term of the lease may also be extended if a suspension of production or suspension of operations has been granted or directed.

Under the lease, the lessor (Federal Government) reserves the right:

- to grant leases for other minerals;
- to issue permits for geological and geophysical exploration;
- to approve pipelines and other rights-of-way;
- to take its royalty on oil and gas production in value or in kind (royalty-in-kind);
- to extract helium from produced gas;
- to suspend operations and production;
- to require operation under a unit, pooling, or drilling agreement; and
- to cancel the lease.

The lease further spells out requirements for surety bonding, royalty payments, rental payments, and assignment or other transfer of the lease or any partial interest. Assignments of whole or partial interest in a lease from one leaseholder to another require the approval of the appropriate Regional Director. Before the approval of a lease assignment, MMS consults with and gives due consideration to the views of the Attorney General with regard to antitrust situations.

In addition, the lease requires that the lessee comply with additional rules and regulations that may be issued after the lease is awarded in order to provide for the prevention of waste and the conservation of the natural resources of the OCS. For example, the DOI could require certain safety equipment that previously had not been required.

Chapter 5. Statutory and Regulatory Authority

The authority for leasing OCS oil and gas stems from the authority vested in the Congress by the Constitution to manage public property. Congress has delegated its authority through specific legislation. A description and the history of the development of that authority follows.

A. Laws

Jurisdiction over the continental shelf is divided between the coastal States and the Federal Government. The States manage the mineral resources off their immediate coasts. The MMS manages the mineral resources in the area under Federal jurisdiction, an area commonly referred to as the OCS.

The formal division of responsibility evolved gradually. As interest in offshore resources began to grow, questions regarding the division of jurisdiction between coastal States and the Federal Government had to be resolved. In 1947 and 1950, the U.S. Supreme Court upheld the position of the Secretary of the Interior which was that the Federal Government, not the States, possessed full power over the lands and natural resources in the submerged land areas seaward of the coasts of the United States.

In response to public concerns about the ownership and development of offshore resources, Congress, in 1953, enacted two laws—the Submerged Lands Act and the OCS Lands Act. These laws granted certain offshore lands to coastal States. They also provided a framework for regulating and managing the exploration, development, and production of oil, gas, and other minerals of the seabed beyond the area managed by the coastal States. The two acts are described below.

1. *The Submerged Lands Act.* The Submerged Lands Act of May 22, 1953, granted the coastal States jurisdiction over a belt of submerged lands seaward of their coastlines to a distance of 3 geographical miles. A greater distance from shore (about 9 geographical miles or 3 marine leagues) was granted to Texas and Florida (west coast only) because these States had established their jurisdiction over the larger area before achieving statehood. The Submerged Lands Act reaffirmed that natural resources of the seabed and subsoil beyond those granted to coastal States would be subject to the jurisdiction of the Federal Government for the benefit of the entire Nation.

2. *The Outer Continental Shelf Lands Act and its Amendments.* The OCS Lands Act of August 7, 1953, authorized the Secretary of the Interior to grant mineral leases and to prescribe regulations governing oil and gas activities on OCS lands. The OCS Lands Act defines the OCS as ". . . all submerged lands lying seaward and outside of the area of lands beneath navigable waters as defined in section 2 of the Submerged Lands Act and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control." The pertinent provision of the Submerged Lands Act defines "navigable waters" as ". . . all lands permanently or periodically covered by tidal waters up to but not above the line of mean high tide and seaward to a line three geographical miles distant from the coast line of each such State and to the boundary line of each such State where in any case such boundary as it existed at the time such State became a member of the Union, or as heretofore approved by Congress, extends seaward (or into the Gulf of Mexico) beyond three geographical miles. . . ."

The OCS Lands Act established the importance of developing the mineral resources of the continental shelf in an expeditious and orderly manner. The Act also recognized the need for safely conducting oil and gas operations and using technology and procedures intended to minimize the likelihood of blowouts, fires, spills, and interference with other uses of the offshore waters.

The Act was amended on September 18, 1978, and those amendments had the following major purposes:

a. To establish policies and procedures that expedite exploration and development on the OCS in order to achieve national economic and energy goals, assure national security, reduce dependence on foreign sources, and maintain a favorable balance of payments in world trade;

b. To balance orderly energy resource development with protection of the human, marine, and coastal environments;

c. To ensure the public a fair and equitable return on the resources of the OCS;

d. To encourage development of new and improved technology in order to eliminate or minimize risk of damage to the human, marine, and coastal environments;

e. To assure that affected States and, through States, local governments have timely access to information regarding OCS activities and opportunities to review, comment, and participate in policy and planning decisions;

f. To establish an oil spill liability fund; and

g. To establish a fishermen's contingency fund.

The Act was amended again in 1986 by the "Outer Continental Shelf Lands Act Amendments of 1985." Included in the provisions of this amendment are the following:

a. The distribution of a portion of the receipts from the leasing of mineral resources of the OCS to coastal States. As provided under section 8(g) (of the Act), twenty-seven percent of the receipts from the area within a three-mile zone adjacent to State lands is to be distributed to affected coastal States. The funds may be used for the mitigation of adverse economic and environmental effects related to the development of such resources.

b. A schedule for the distribution of funds in the section 8(g) account to affected coastal States of revenues received as a result of leasing activity from September 1978 through October 1, 1985; and a formula for the distribution of additional payments to be made for leasing activity occurring after October 1, 1985.

The OCS Lands Act Amendments of 1985 also amended the Submerged Lands Act by adding language addressing the immobilization of boundaries between a State and the United States when the coordinates of the boundaries are fixed under a final decree of the Supreme Court.

3. *Other Laws Which Govern the OCS.* Leasing and operations activities on the OCS are also subject to the requirements of some 30 other Federal laws administered by numerous Federal Departments and Agencies. Among them are the following:

National Environmental Policy Act which establishes requirements for preparing environmental assessments and EIS's for major Federal actions that could significantly affect the quality of the human environment.

Endangered Species Act which requires that Federal Agencies ensure that their actions are not likely to jeopardize the continued existence of any threatened or endangered species.

Coastal Zone Management (CZM) Act, as amended, which provides for State review of exploration plans and development and production plans that affect the land and water use of the coastal zone. The Act also requires consistency of relevant activities in those plans with approved State coastal management programs.

Federal Water Pollution Control Act (commonly known as the Clean Water Act) which requires that in-water discharges of pollutants generated by OCS operations comply with the limitations and restrictions that are included in an applicable National Pollutant Discharge Elimination System (NPDES) permit.

Ports and Waterways Safety Act which protects navigational safety.

Marine Mammal Protection Act which provides for protection of marine mammals.

Clean Air Act which establishes national ambient air quality standards.

National Historic Preservation Act, as amended, which provides for the protection of historic and prehistoric archaeological resources.

B. Regulations

The MMS administers the provisions of the OCS Lands Act, as amended, through regulations found at Title 30 of the Code of Federal Regulations, Chapter II. The regulations govern leasing and operations on the OCS. They provide for public participation in the leasing process, including the review by and coordination with State governments, consideration of State CZM programs, and the solicitation of information from the public concerning proposed lease sales through a call for information and nominations. In addition, the regulations provide for royalty payments, environmental studies, and consultation with appropriate Federal and State agencies to develop measures to mitigate adverse effects on the environment. The regulations require industry to submit an exploration plan to MMS which includes measures to protect the environment. The MMS reviews the plan, analyzes the environmental effects, and determines appropriate mitigating measures before approving the plan. The regulations also require industry to submit a development and production plan before development can take place. The MMS approves the plan taking into account environmental, technical, and economic considerations. Many other elements of leasing and operations are covered in the MMS regulations which reflect the mandates of the OCS Lands Act, as amended.

Other Agencies in addition to DOI regulate specific aspects of leasing and operations. For example, EPA regulates waste discharges; the Department of Transportation (DOT) regulates occupational safety and health, the reporting and containment of oil spills, and the design of pipelines and mobile offshore drilling units; and COE regulates the placement of structures.

C. Orders, Stipulations, Notices, and Conditions of Approval

1. *OCS Orders.* The MMS issues OCS Orders which govern most of the day-to-day drilling and production operations on leases. The OCS Orders establish specific requirements for performing various types of oil and gas operations which include drilling, production, well abandonment, pipeline transportation, and other important offshore oil and gas activities. Although OCS Orders are separate documents from the regulations, they are considered part of the regulatory framework. The MMS is currently studying its regulatory program and is proposing to incorporate all the requirements in the OCS Orders into a single set of regulations.

Separate OCS Orders have been issued for each OCS Region, although they usually specify common requirements. The requirements, however, can be modified or expanded to accommodate regional differences. This is particularly true for the Alaska OCS Region where

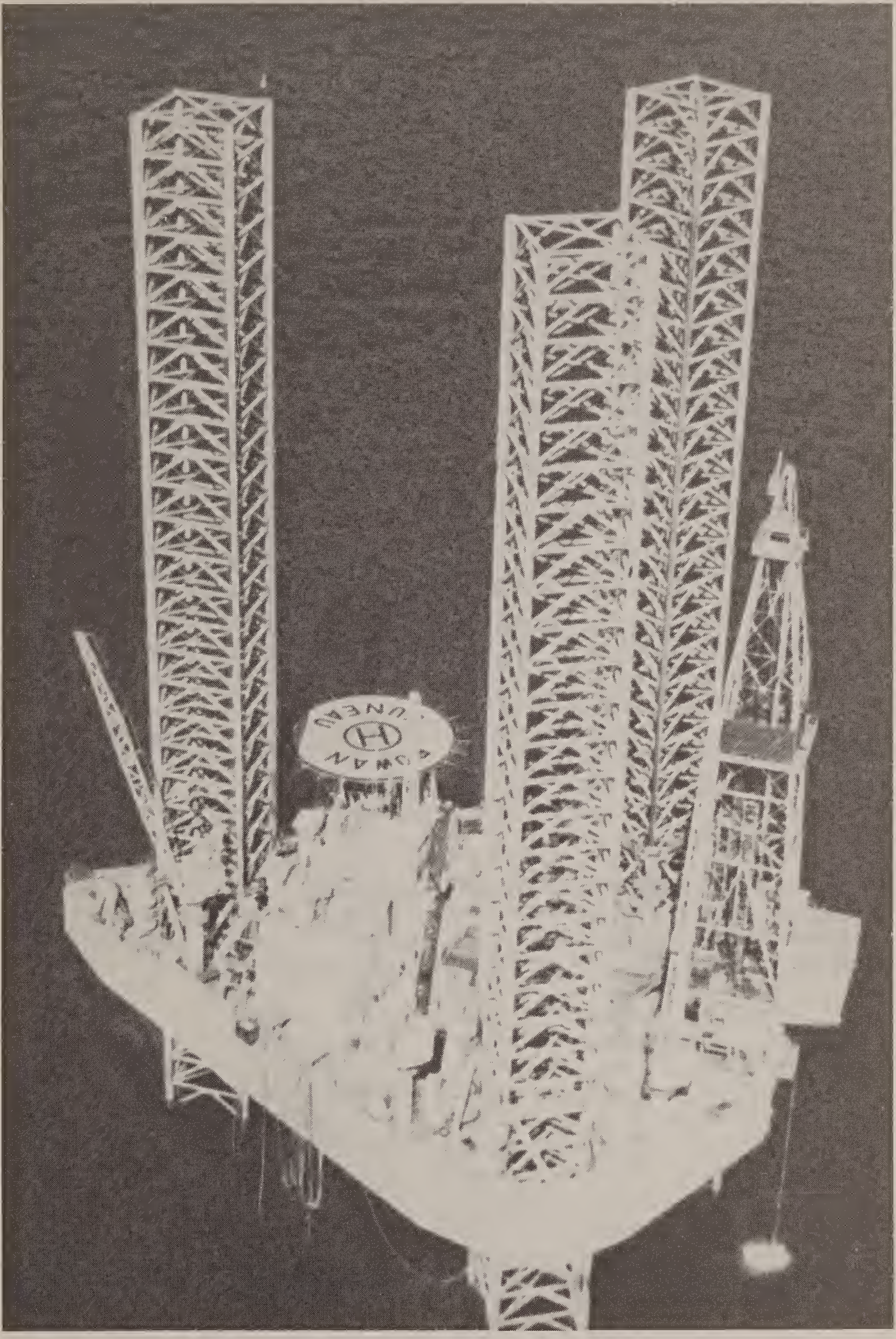


FIGURE 20: *Jack-up drilling unit which rests on the seafloor (usually at depths less than 300 feet).*

permafrost, ice cover, isolated locations, subfreezing temperatures during much of the year, and severe oceanographic conditions complicate oil and gas operations.

2. *Stipulations*. Special stipulations are often included in OCS oil and gas leases in response to concerns raised by coastal States, fishing groups, Federal Agencies, and others. The stipulations may require biological surveys of sensitive seafloor habitats, environmental training for operations personnel, special waste-discharge procedures, archaeological resource reports to determine the potential for historic or prehistoric resources, special operating procedures near military bases or their zones of activity, and other restrictions on OCS oil and gas operations. Lease stipulations are legally binding, contractual provisions.

3. *Notices to Lessees and Operators.* The NTL's are used to quickly notify operators within a particular OCS Region concerning changes in MMS administrative practices or procedures for complying with rules, regulations, and lease stipulations. The NTL's themselves do not impose new requirements on lessees.

4. *Conditions of Approval.* Conditions of approval are often attached to approved permits such as applications for permit to drill, deepen, or plug back (APD). These conditions range from administrative matters, such as the required frequency and number of reports, to technical or environmental conditions such as requirements for the disposal of drilling mud. In all cases, they are specific conditions that amplify or explain a requirement in the regulations, OCS Orders, or lease stipulations.

D. Presidential Proclamation on the Exclusive Economic Zone

On March 10, 1983, a Presidential Proclamation established an Exclusive Economic Zone (EEZ) of the United States of America. The EEZ extends seaward 200 nautical miles from the "baseline" (the legal coastline) of the territorial sea of the United States, the Commonwealths of Puerto Rico and Northern Mariana Islands, and other U.S. overseas territories and possessions. The EEZ extends over 3 billion acres subject to U.S. jurisdiction.

Within the EEZ, the United States has sovereign rights, to the extent permitted by international law, to explore, exploit, conserve, and manage natural resources, both living and nonliving, of the seabed and subsoil. The Secretary of the Interior is authorized by the OCS Lands Act to manage the leasing of oil and gas within the EEZ contiguous to the 50 States.

Chapter 6. Revenues

Revenues from OCS leasing consist of bonuses, royalties (or profit shares) and rentals, all of which are deposited in the U.S. Treasury. Additionally, OCS lessees are subject to the Federal income tax laws; since 1980, they have also been subject to the "windfall profits" tax on sales of crude oil.

As described previously, each bid submitted must include payment of one-fifth of the bonus bid. The bonus money from high (successful) bidders is placed in a special interest-bearing account until the decision on bid adequacy is made. All bonus money is immediately returned to unsuccessful bidders. Once a bid is accepted and a lease awarded, the money from the successful bidder is deposited in the U.S. Treasury. Within 11 business days of the successful bidder's receipt of the lease, the remaining four-fifths of the bonus bid and the first year's annual rental for the lease must be paid by EFT directly to the U.S. Treasury.

Rentals are due each year before the anniversary date of each lease. The rental rate is typically $3 per acre or $8 per hectare. Following the discovery of hydrocarbons, the lessee pays a minimum royalty equivalent to the yearly rental. If there is production on the lease and the royalty paid on actual production is less than the minimum royalty, the lessee must pay the difference between the actual royalty and the prescribed minimum royalty to bring the total paid up to the minimum royalty. For this reason, minimum royalty is due at the expiration of each lease year beginning with the first lease year following a discovery on a lease.

The royalty (or profit share) rate for each tract is stated in the notice of sale. Royalty payments begin when production begins. Generally, royalty payments owed the Federal Government are based on a percentage of the value of essentially all of the extracted minerals. The royalty due the Federal Government may be taken in value or in produced oil known as royalty-in-kind. Royalty taken in value is a monetary payment by the lessee while royalty-in-kind is a payment by the lessee of crude oil itself. The Federal Government then sells the crude oil to eligible refiners who in turn pay for the value of the oil in the form of a monetary payment.

For the period 1954 through 1986, the Federal Government received over $52.9 billion dollars in bonuses, $541.2 million in rentals (includes minimum royalties), and $30.7 billion in royalties from oil and natural gas activities on the OCS. Figure 21 shows revenues from bonuses, rentals, and royalties received from OCS oil and gas leases, 1974 through 1986.

Some of the revenues from OCS leases are credited to two special funds, the Land and Water Conservation Fund and the Historic Preservation Fund, created pursuant to the Land and Water Conservation Fund Act and the National Historic Preservation Act. Current legislation dictates that the Land and Water Conservation Fund be credited with $900 million annually. The fund draws most of its income from Federal receipts from OCS oil and gas leasing. The transfer of OCS revenues to the Land and Water Conservation Fund amounted to $784 million in FY 1985 and to $755 million in FY 1986. Transfers to the Historic Preservation Fund have amounted to $150 million annually since 1980.

Under amendments (effective in 1986) to section 8(g) of the OCS Lands Act, a portion of the revenues from certain leases is distributed to coastal States.

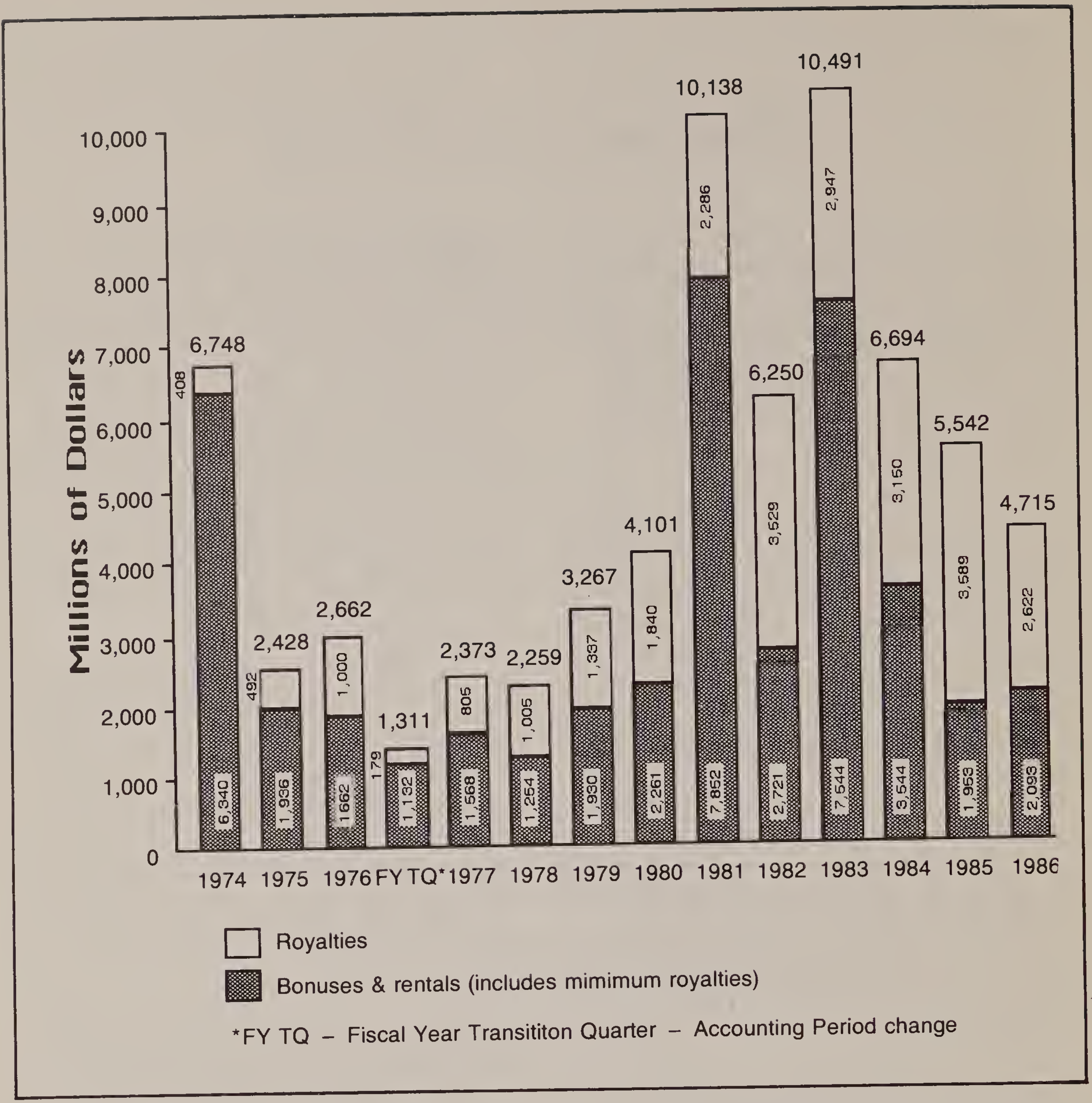


FIGURE 21: *Revenue from bonuses, rentals, and royalties received from OCS oil and gas leases, 1974 through 1986.*

Chapter 7. Operations Summary

The lessee begins the exploration phase of lease operations in accordance with the hydrocarbon potential of the lease, the availability of rigs, and various internal factors. As an initial step, the lessee conducts preliminary activities such as geological, geophysical, cultural, and biological surveys which provide data necessary to develop a comprehensive exploration plan and an environmental report. Once completed, the lessee forwards the exploration plan and environmental report to MMS for approval. The exploration plan describes the proposed exploratory activities in detail including oil spill contingency plans. The environmental report contains additional information pertaining to support facilities and activities and environmental aspects of the proposed operations. These documents form the basis of a technical and environmental analysis which is performed by MMS as part of its review procedure.

Concurrent with a technical and environmental review by MMS, the exploration plan and environmental report are subject to review by other Federal Agencies, Governors of all affected States, and other State agencies. The State review includes a coastal zone consistency review pursuant to the CZM Act. In addition, the Plan and environmental report are made available for public review and comment.

Even though MMS approves an exploration plan, actual drilling cannot begin until the lessee has submitted and received approval of an APD which is required for each proposed well. The APD includes extensive detail about the drilling program with an emphasis on matters pertaining to operational safety and pollution prevention. It is not approved until State concurrence with the coastal zone consistency certification is received (or conclusively presumed).

The objective of the exploration phase is to discover oil or gas in commercial quantities. To accomplish this, the lessee will drill one or more wells from drilling units which can be categorized as (1) floating units such as drillships, semisubmersibles, and drilling barges, and (2) bottom-founded units that are floated to the drillsite but rest on the seafloor during drilling operations. Drilling units in the latter category are jackups and submersibles. In arctic regions, wells are often drilled from gravel or ice islands or specially designed units such as a concrete island drilling system and a mobile arctic caisson. A well generally will take from 1 to 6 months to drill, and, once the results are known to the lessee, the well will be plugged, either temporarily or permanently abandoned, and the drilling equipment moved to a new site.

When an oil or gas reservoir has been discovered and its extent determined through delineation drilling, the lessee may commence the development and production phase of operations. These operations must be described in a development and production plan which includes an oil spill contingency plan and an environmental report. The development and production plan is prepared by the lessee and is submitted to MMS for approval. It is forwarded by the MMS for review to all affected States, State coastal agencies, and interested Federal Agencies. The review process is similar to that for the exploration plan including CZM consistency review. An environmental assessment is prepared, and, if MMS determines that approval of the plan constitutes a major Federal action significantly affecting the quality of the human environment, an EIS is prepared. At least one production plan

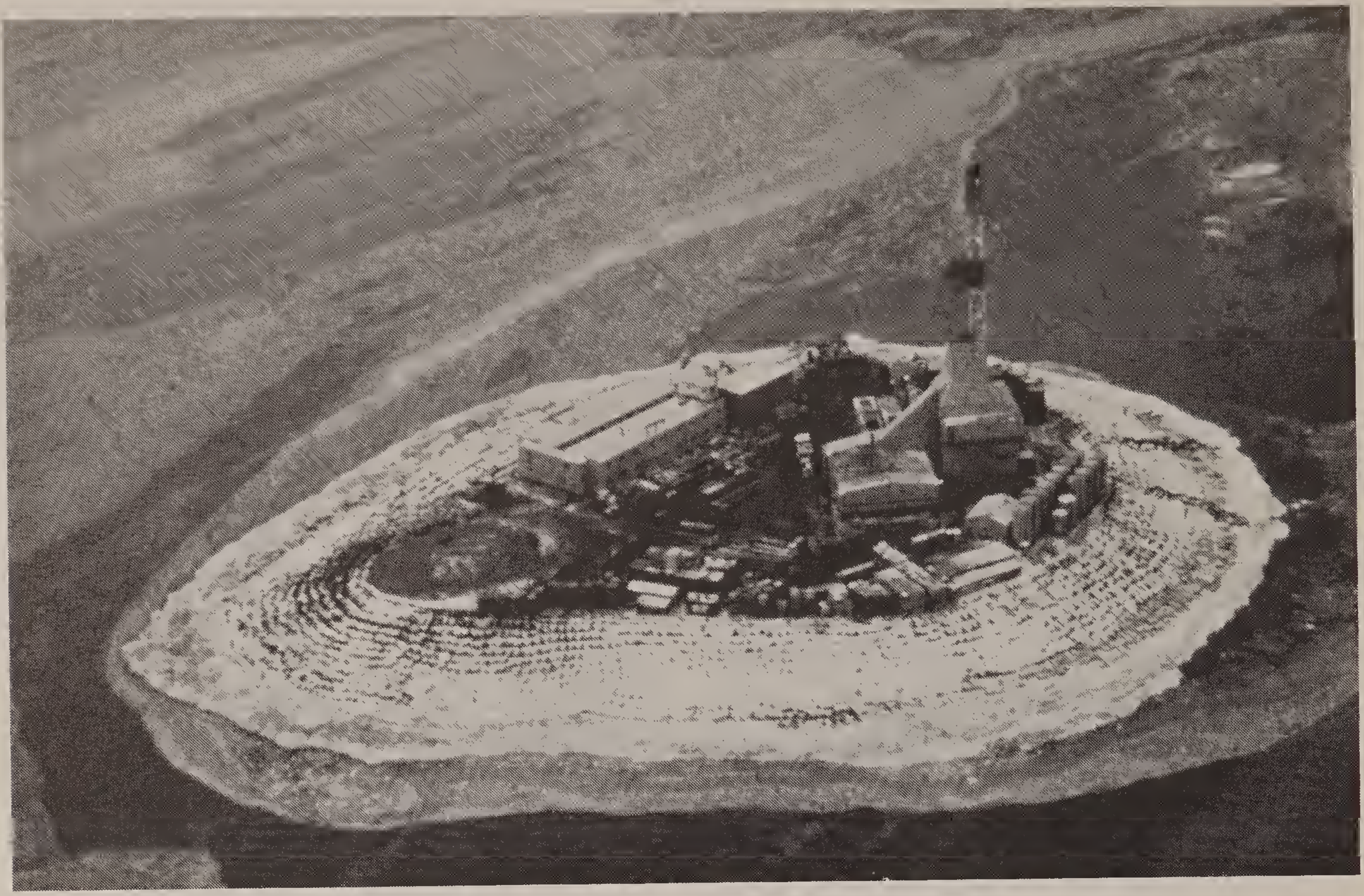


FIGURE 22: *Gravel island.*

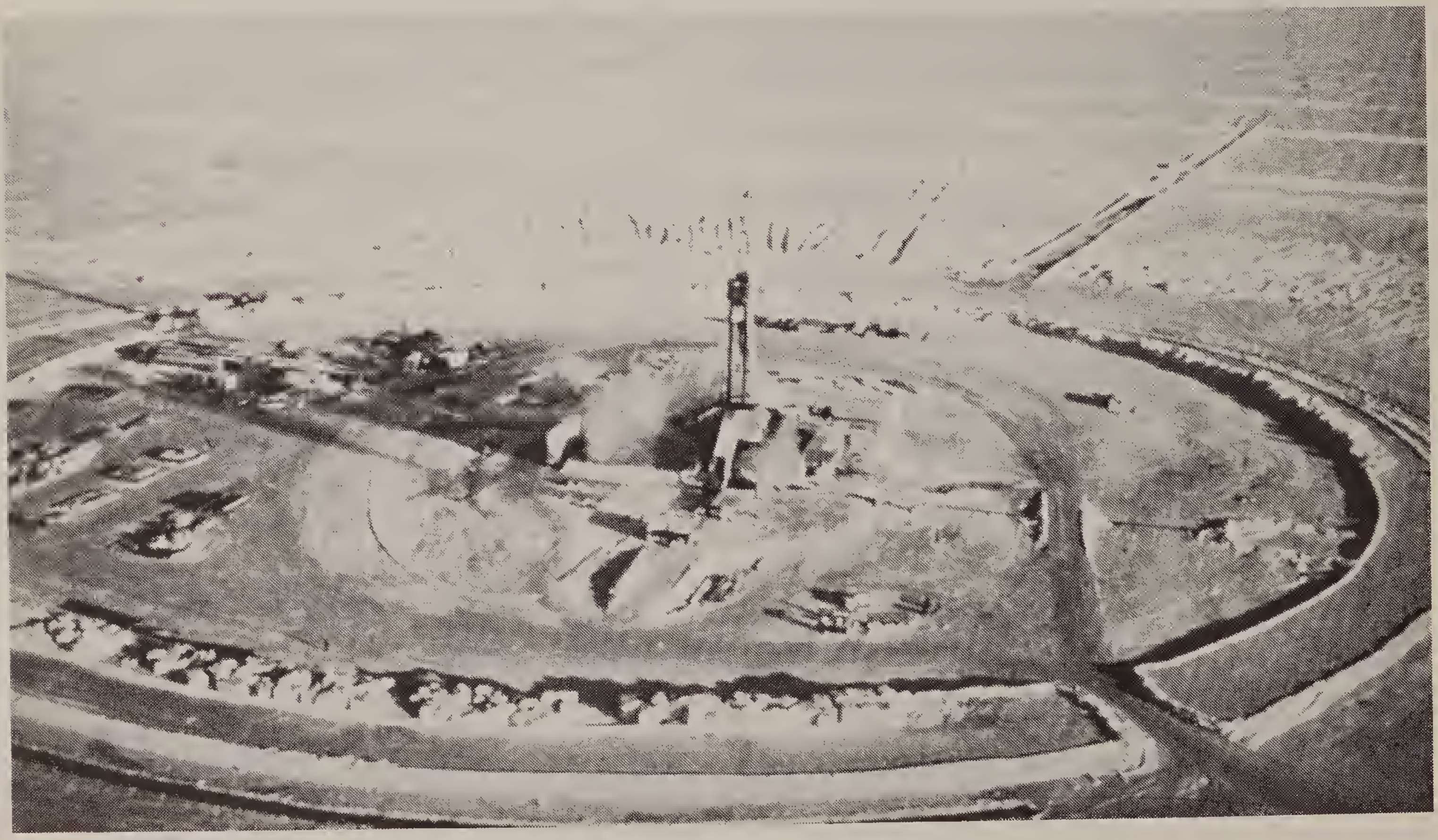


FIGURE 23: *Artificial ice island.*

in each area other than the Gulf of Mexico is declared a major Federal action and an EIS is prepared. Operations described in the plan cannot be undertaken until the plan is approved by MMS and necessary permits issued. These permits, such as an APD for a well proposed in the plan, cannot be approved until State concurrence for the coastal zone consistency certification is received (or conclusively presumed).

Development and production entails installation of platforms and production systems and the drilling of development wells. In addition, onshore support facilities, if not already in place, must be constructed. The oil and gas produced offshore are separated and moved to shore for final processing. Gas is transported soley by pipelines while crude oil is moved by pipeline, barge, or tanker to shore facilities. All platform and artificial island installations, platform facilities, and pipelines require MMS approval.

A production platform may accommodate from 1 to as many as 100 production and injection wells and will remain in place for the life of the reservoir or field, which could be over 30 years.

During the productive life of a field, the lessee conducts well workover or repair operations of various types to maintain a high production level. Most of these operations require MMS approval. Throughout the drilling and production phases, MMS inspects the operations to assure compliance with regulations. This further assures operational safety and pollution prevention. Also, MMS certifies and requires attendance at training schools for drilling personnel involved with well control.

Other MMS involvements include the granting of suspensions of production; setting maximum rates of production; estimating reserves; approving unit, pooling, and drilling agreements, when applicable; and approving applications for permission to install pipelines both on and off a lease.

When a field can no longer be economically produced and the lease expires, the lessee, with MMS approval, must plug and abandon all wells and remove all equipment from the lease including the platform and any subsea devices.

For more information about operations on the OCS, see the MMS publication, “Managing Oil and Gas Operations on the Outer Continental Shelf,” which more fully describes the MMS role in managing exploration, development, and production activities on the OCS.

Selected MMS References

This list includes documents not referenced in the text. Copies of these documents are available from MMS, Office of Offshore Information and Publications, 1951 Kidwell Drive, Vienna, Virginia 22180.

Collins, J.H., and Lynch, C.W., 1985, Alaska summary report (June 1984-December 1985): U.S. Department of the Interior OCS Information Report, MMS 86-0023, 114 p. and 3 plates.

Collins, J.H., and Risotto, S.P., 1986, Gulf of Mexico summary report/index (November 1984-June 1986): U.S. Department of the Interior OCS Information Report, MMS 86-0084, 102 p. and 3 plates.

Dellagiarino, G., ed., 1986, United States Outer Continental Shelf basins, maps and descriptions: U.S. Department of the Interior, 80 p. and 2 plates.

Lynch, C.W., and Molajo, D.D., 1985, Atlantic index (June 1984–January 1985): U.S. Department of the Interior OCS Information Report, MMS 85-0036, 115 p.

Minerals Management Service, 1986, Federal offshore statistics: 1985: U.S. Department of the Interior, 75 p. (Released annually.)

———1986, Mineral revenues: the 1985 report on receipts from Federal and Indian leases: U.S. Department of the Interior, 92 p. (Copies of this publication may be obtained by writing to the following address: Royalty Management Program, Minerals Management Service, Washington, DC 20240.)

———1986, OCS Laws related to mineral resource activities on the Outer Continental Shelf: U.S. Department of the Interior, 1,000 p.

———1986, OCS National Compendium, Outer Continental Shelf oil and gas information through 1984: U.S. Department of the Interior, 172 p.

———1986, OCS oil and gas leasing/production program, annual report to Congress/FY 1985: U.S. Department of the Interior, 58 p.

———1986, Offshore scientific and technical publications: U.S. Department of the Interior, 25 p. (This quarterly publication lists all current (1985–1986) scientific and technical publications of the Offshore Minerals Management Program.)

———1986, Offshore scientific and technical publications, 1984 annual: U.S. Department of the Interior OCS Report, MMS 86-0010, 15 p. (This publication lists all 1984 scientific and technical publications of the Offshore Minerals Management program.)

———1987, Proposed 5-year Outer Continental Shelf oil and gas leasing program, mid-1987 to mid-1992, final environmental impact statement: U.S. Department of the Interior OCS EIS/EA, MMS 86–0127, 3 vol.

Molajo, Denise, 1985, Pacific index (April 1983-October 1984): U.S. Department of the Interior OCS Information Report, MMS 85-0004, 84 p.

Molajo, D.D., 1985, Alaska index (May 1983-January 1985): U.S. Department of the Interior OCS Information Report, MMS 85-0037, 85 p.

Molajo, D.D., Risotto, S.P., and Farris, V.A., 1984, Gulf of Mexico index (August 1983-October 1984): U.S. Department of the Interior OCS Information Report, MMS 85-0043, 86 p.

Risotto, S.P., and Rudolf, R.W., 1986, Pacific summary report/index (November 1984-May 1986): U.S. Department of the Interior OCS Information Report, MMS 86-0060, 115 p.

Rudolph, R.W., and Havran, K.J., 1985, Atlantic summary report (December 1984): U.S. Department of the Interior OCS Information Report, MMS 85-0021, 74 p. and 3 plates.

Rudolph, R.W., and Nikituk, P.M., 1985, Pacific summary report (April 1985): U.S. Department of the Interior OCS Information Report, MMS 85-0040, 90 p. and 3 plates.

Slitor, D.L., and Weise, J.D., 1987, Alaska summary/index: January 1986 to December 1986: U.S. Department of the Interior OCS Information Report, MMS 87-0016, 99 p.

Wiese, J.D., 1986, Atlantic summary/index (January 1985-June 1986): U.S. Department of the Interior OCS Information Report, MMS 86-0071, 38 p.

Glossary

A. Terms

Adjacent State—See "Area Adjacent to a State."

Affected State. This term is defined in specific detail in the OCS Lands Act, as amended (Section 1331(f)). For the purposes of this document, the term is defined briefly, as follows:

(1) For actions pursuant to the OCS Lands Act: a State which is or may be affected by activities on the OCS. In common usage, "Affected State" means the State(s) identified by the Secretary of the Interior for consultation on OCS leasing.

(2) For actions pursuant to the CZM Act: a State whose land and water use in the coastal zone are affected by an OCS permit and/or an exploration or a development and production plan.

Area Adjacent to a State—All of that portion of the OCS which is included within a planning area if such planning area is bordered by that State or is deemed by 30 CFR 252.2 to be adjacent to that State.

Area of Hydrocarbon Potential—An area which has the primary geologic characteristics favorable for the generation and the accumulation of hydrocarbons.

Bid—An offer for an OCS lease submitted by a potential lessee in the form of a cash bonus dollar amount or other commitments as specified in the final notice of sale.

Bidding System—A combination of terms and conditions under which a bid is submitted. The economic terms include, but are not necessarily limited to, (1) the minimum bid per acre, (2) the yearly rental, (3) the minimum royalty, and (4) the royalty or profit share rates imposed on future production from those tracts leased. See "Royalty."

Bidding Unit—All unleased Federal portions of 2 or more blocks whose combined acreage is 5,760 acres or less which is offered in a specific lease sale as a single leasable entity. See "Tract."

Block—A numbered area on an OCS leasing map or official protraction diagram. (See "OCS Leasing Maps and Official Protraction Diagrams.") Blocks are portions of OCS leasing maps and official protraction diagrams that are themselves portions of planning areas. Blocks vary in size, but typical ones are 5,000 to 5,760 acres (approximately 9 square miles). Each block has a specific identifying number, area, and latitude and longitude coordinates that can be pinpointed on a leasing map or official protraction diagram. See "Tract."

Blowout—An uncontrolled flow of gas, oil, or other fluids from a well to the atmosphere. A well may blow out when formation pressure exceeds the pressure overburden of a column of drilling fluid.

Bonus—Advance money offered by a bidder for the right to be awarded an oil and gas lease.

Cap Rock—An impermeable rock overlying an oil or gas reservoir that tends to prevent migration of fluids from the reservoir.

Cash Bonus—See "Bonus."

Coastal Zone—Coastal waters and the adjacent shorelands strongly influenced by each other. Note: the term, "Coastal Zone" has a special meaning when the word is used in the context of CZM programs. When used in that context, "Coastal Zone" means State coastal waters and adjacent lands identified by a State in its approved CZM program.

Coastal Zone Consistency Review—Review of Federal licenses or permits and OCS plans pursuant to tne CZM Act by affected coastal States to determine if the action is consistent with the State-approved CZM program. (This review can take up to 6 months to complete.)

Compliant Guyed Tower—See "Guyed Tower."

Conclusively presumed—Assumed to be concurred in. The term relates to the concurrence by a State in an applicant's consistency certification for a plan of exploration or a plan of development and production. If a State does not comply with the time requirements of the CZM Act to notify appropriate officials of its concurrence with or objection to an applicant's certification, the MMS can presume that the State concurred with it. See "Coastal Zone Consistency Review."

Condensate—Liquid hydrocarbons produced with natural gas which are separated from the gas by cooling and various other means.

Consistency Review—See "Coastal Zone Consistency Review."

Crude Oil—A mixture of liquid hydrocarbons that exists in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities but does not include liquid hydrocarbons produced from tar sand, gilsonite, oil shale, or coal. Crude oil ranges from very light (high in gasoline) to very heavy (high in residual oil). Sour crude is high in sulphur content.

Delineation Well—A well that is drilled to determine the extent of a reservoir.

Development—Activities following exploration including the installation of facilities and the drilling and completion of wells for production purposes.

Development and Production Plan—A plan submitted by industry to MMS for approval which describes activities beyond exploration until the lease expires. The activities include facility installation, drilling and production, etc.

Drillship—A self-propelled, self-contained vessel equipped with a derrick amidships for drilling wells in deep water. It may have a ship hull, a catamaran hull, or a trimaran hull.

Economically Recoverable Resource Estimate—An assessment of hydrocarbon potential that takes into account (1) physical and technological constraints on production and, (2) the influence of costs of exploration and development and market price on industry investment in OCS exploration and production.

Environmental Assessment—A concise public document required by NEPA. In the document, a Federal Agency proposing an action provides evidence and analysis for determining whether it must prepare an EIS or whether it finds there is no significant impact, i.e., FONSI.

Environmental Impact Statement—A statement prepared by a Federal Agency in compliance with NEPA for any major action that could have a significant affect on the human environment.

Exploration—The process of searching for minerals preliminary to development. Exploration activities include (1) geophysical surveys, (2) any drilling to locate an oil or gas reservoir, and (3) the drilling of additional wells after a discovery to delineate a reservoir. It enables the lessee to determine whether to proceed with development and production.

Exploration Plan—A plan submitted by a lessee that identifies all the potential hydrocarbon accumulations and wells that the lessee proposes to drill to evaluate the accumulations within the lease or unit area covered by the plan. All lease operators are required to obtain approval of such a plan by a Regional Director before exploration activities may commence.

Field—A geographical area in which one or more oil or gas wells produce. A field may refer to surface area only or to underground productive formations. A single field may include several reservoirs separated either horizontally or vertically.

Five-Year Program and Leasing Schedule—A leasing program that consists of a schedule of proposed lease sales indicating, as precisely as possible, the size, timing, and location of leasing activity which the Secretary of the Interior determines will best meet national energy needs for the 5-year period following its approval or reapproval.

Fixed Platform/Drilling Tender Combination—A combination of a fixed bottom-founded platform and a floating tender. The platform is permanently attached to the seafloor and carries the essential drilling equipment. The floating tender is temporarily attached to the platform and carries many of the accessories.

Formation—A bed or deposit composed of substantially the same kinds of rock. Each different formation is given a name, frequently as a result of the study of the formation outcrop at the surface and sometimes based on fossils found in the formation.

Formation Fracture Gradients—Pressure per unit depth at which the formation rocks will fail causing interconnecting cracks to form in the rock beds with resultant penetration of the formation by wellbore fluid.

Guyed Tower—A relatively slender trussed steel column of constant cross section which supports one or more decks. The tower is held in place by guylines extending radially from the top of the tower to clump weights and anchors on the ocean floor. The tower is designed to move with environmental forces rather than resist them.

Hydrocarbon—Any of a large class of organic compounds containing primarily carbon and hydrogen. Hydrocarbons include crude oil and natural gas.

Hydrocarbon Potential—See “Area of Hydrocarbon Potential.”

Impervious Cap—See “Cap Rock.”

Jacket—See “Steel-Jacketed Platform.”

Jack-up Unit—An offshore drilling structure with tubular or truss legs that support the deck and hull. When positioned over a drilling site, the leg bottoms rest on the seafloor. A jack-up unit is towed or propelled to a location with its legs up.

Lease—A contract authorizing exploration for and development and production of minerals for a specified period of time over a given area. The meaning of “lease” depends upon its use in context.

Lease Operator—See “Operator.”

Lease Sale—An MMS proceeding by which leases for certain OCS tracts are offered for sale by competitive sealed bidding and during which bids are received, announced, and recorded.

Lease Term—Duration of a lease. Oil and gas leases are issued for an initial period of 5 years or not to exceed 10 years where such longer period is necessary to encourage exploration and development in areas because of unusually deep water or other unusually adverse conditions. Once production is reached, the term continues as long as there is production.

Leasing Map—See “OCS Leasing Maps and Official Protraction Diagrams.”

Lessee—A person or persons to whom a lease is awarded; the recipient of a lease. See “Lease Operator.”

Minimum royalty—The lowest payment a lessee must pay on a Federal or Indian lease after production begins. It is equivalent to the yearly rental, typically $3 per acre or $8 per hectare (offshore). Rentals are paid annually before a discovery; royalties are paid on production after a discovery. If the total royalty payments amount to less than the yearly rental, the minimum royalty payments make up the difference. See “Royalty.”

Natural Gas—A mixture of hydrocarbon compounds and small quantities of various nonhydrocarbons existing in gaseous phase at the surface or in solution with crude oil in natural underground reservoirs at reservoir conditions.

Net Profit Share—A bidding system for leasing tracts on the OCS that uses the cash bonus as the bid variable and requires a fixed annual rental payment and net profit share payments at a fixed percentage rate that is constant for the duration of the lease.

Nonenergy Minerals—All minerals other than oil, gas, and sulphur.

Notices to Lessees and Operators—The MMS documents used to distribute information to lessees and operators. The NTL's may be issued for several reasons, e.g., providing an interpretation of a regulation or transmitting administrative information such as a change in an MMS office address.

OCS—See "Outer Continental Shelf."

OCS Leasing Maps and Official Protraction Diagrams—Basic geographical records; maps used in lease sales. Leasing maps are used in the Gulf of Mexico (nearshore Texas and Louisiana) and in small areas offshore California. Leasing maps are developed on the basis of extensions of the leasing grids used onshore. Most of the offshore area is mapped on official protraction diagrams (OPD's) using the Universal Transverse Mercator grid system. Each OPD covers 1° latitude by 2° longitude (except for offshore Alaska which is 1° latitude by 3° longitude) and is divided into blocks. See "Block."

Each leasing map or OPD bears a distinct alphanumeric number and in most cases a name based on onshore land features, a nearby city or town, or the hydrographic features contained within the limits of the diagram. Shoreline detail is also depicted on the OPD when it falls within the limits of the particular diagram.

Official Protraction Diagram—See "OCS Leasing Maps and Official Protraction Diagrams."

Operator—The individual, partnership, firm, or corporation having control or management of operations on a leased area or a portion thereof. The operator may be a lessee, designated agent of the lessee, or holder of rights under an approved operating agreement.

Outer Continental Shelf—The part of the continental shelf beyond the line that marks State ownership; that part of the offshore lands under Federal jurisdiction. (For the definition that is in the OCS Lands Act, see the chapter on Statutory and Regulatory Authority.)

Permafrost—Permanently frozen subsoil in arctic or subarctic regions.

Permeability—The measure of a rock's ability to transmit fluids; a measure of the ease with which fluids can flow through a porous rock.

Plan of Development and Production—See "Development and Production Plan."

Plan of Exploration—See "Exploration Plan."

Planning Area—A subdivision of an offshore area used as the initial basis for considering blocks to be offered for lease in the DOI's areawide offshore oil and gas leasing program.

Platform—An offshore structure built on pilings from which offshore wells are drilled, produced, or both.

Platform—Guyed Tower. See "Guyed Tower."

Platform—Steel Jacketed—See "Steel-Jacketed Platform."

Porosity—The ratio of the holes, voids, or pores in a rock to its total volume or size.

Production—The phase of oil and gas operations involved with well fluids extraction, separation, treatment, storage, measurement, and (sometimes) transportation.

Proprietary Information—Geologic and geophysical data, information, and derivatives tnereof that cannot be released to the public for a specified term because of Federal law, regulations, or statutes, or because of contractual requirements.

Protraction Diagram—See "Official Protraction Diagram."

Qualified Bidder—A bidding entity or person who has met the appropriate requirements of 30 CFR Part 256, Subpart G, and of the notice of sale.

Reserves—A discovered resource. That portion (in barrels or cubic feet) of an identified oil or gas resource which can be economically extracted using current technology.

Reservoir—A subsurface, porous, permeable rock body in which oil or gas or both are stored.

Resources—Concentrations of naturally occurring solid, liquid, or gaseous materials in or on the Earth's crust. These include both identified (discovered) and undiscovered resources.

Rig—The derrick, drawworks, and attendant surface equipment of a drilling or workover unit.

Royalty—A share of the minerals produced from a lease; a percentage of production either in money or in kind which a lessee of a Federal or Indian lease is required to pay. See "Royalty-in-kind."

Royalty-in-kind—A payment by a lessee in crude oil rather than in cash for the amount of royalty due the Federal Government as the Federal Government's share (per the lease contract) of the extracted oil and gas. (The Federal Government then sells the crude oil to eligible refiners who in turn pay for the value of the oil in the form of a monetary payment.)

Sale Area—The grouping of whole and partial blocks within a specific planning area being offered for sale.

Scoping—A "reaching-out" process intended to involve all interested persons and groups (Federal and non-Federal) in determining issues, areas, and alternatives to be studied in an EIS.

Semisubmersible—A floating offshore drilling structure that has hulls submerged in the water but not resting on the seafloor.

Steel-Jacketed Platform—A conventional steel tower supporting one or more decks on which drilling and production equipment is mounted. The tower consists of welded steel tubular members; it increases in horizontal cross section from top to bottom. The steel-jacketed platform is connected to the ocean floor by piles driven through the legs and grouted with cement in the space between the pile and the jacket. The platform is designed to resist environmental forces.

Stipulations—Specific measures imposed upon a lessee that apply to a lease. Stipulations are attached as a provision of a lease; they may apply to some or all tracts in a sale. For example, a stipulation might limit drilling to a certain time period of the year.

Strategic and Critical Minerals—Minerals that (1) would be needed to supply the military, industrial, and essential civilian needs of the United States during a national defense emergency, and (2) are not found or produced in the United States in sufficient quantities to meet such needs.

Sundry Notice—A form used by a lessee for requesting approval from MMS for specific work on a well such as cleaning out sand or treating with acid to increase production.

Suspension of Operations or Production—An authorized temporary cessation or prohibition of activities on a leasehold. As of the effective date of a suspension, time on a lease stops for the life of the suspension, thus having the effect of extending the term of a lease for a period of time equal to the length of time of the suspension.

Tender—A barge or small ship serving as a supply and storage facility for an offshore drilling unit; a supply ship.

Term—See "Lease Term."

Tract—A designation assigned for administrative and statutory purposes to a block or combination of blocks that are identified on a leasing map or an official protraction diagram prepared by MMS. A tract may not exceed 5,760 acres unless it is determined that a larger area is necessary to comprise a reasonable economic production unit. See "Leasing Map," "Block," and "Bidding Unit."

Unitization—A process by which two or more leases are joined together through an agreement to act as one. For example, leases may be unitized for the efficient development and production of a reservoir that lies beneath more than one lease.

Workover—Operations on a shut-in or producing well to restore or increase its production.

B. Abbreviations and Acronyms

API—American Petroleum Institute

APD—application for permit to drill, deepen, or plug back

CEQ—Council on Environmental Quality

COST—continental offshore stratigraphic test

CZM—coastal zone management

DOD—Department of Defense

DOE—Department of Energy

DOI—Department of the Interior

DOT—Department of Transportation

DST—deep stratigraphic test or drill stem test, depending on context

EEZ—Exclusive Economic Zone

EFT—electronic funds transfer

EIS—environmental impact statement

EPA—Environmental Protection Agency

FY—Fiscal Year

FWS—U.S. Fish and Wildlife Service

MMS—Minerals Management Service

NEPA—National Environmental Policy Act

NOAA—National Oceanic and Atmospheric Administration

NPDES—National Pollution Discharge Elimination System

NTL—Notice to Lessees and Operators

OCS—Outer Continental Shelf

OCSIP—OCS Oil and Gas Information Program

OPD—official protraction diagram

RTWG—regional technical working group

SID—secretarial issue document

USCG—U.S. Coast Guard

BLM LIBRARY
SC-324A, BLDG. 50
DENVER FEDERAL CENTER
P. O. BOX 25047
DENVER, CO 80225-0047

Art/Photo Credits

Front Cover		Jean Thomas
Figure	1.	Department of the Interior
	2-3.	Courtesy of API
	4-19.	Department of the Interior
	20.	Courtesy of API
	21.	Department of the Interior
	22-23.	Courtesy of API

BLM LIBRARY
SC-324A, BLDG. 50
DENVER FEDERAL CENTER
P. O. BOX 25047
DENVER, CO 80225-0047

☆ U.S. GOVERNMENT PRINTING OFFICE: 1987 - 181-407 - 226/62006

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. Administration.

DATE DUE

GAYLORD

ER'S CARD

ces on
l shelf

OFFICE

DATE RETURNED

(Continued on reverse)

BLM LIBRARY
SC-324A, BLDG. 50
DENVER FEDERAL CENTER
P. O. BOX 25047
DENVER, CO -0047

U.S. DEPARTMENT OF THE INTERIOR

March 3, 1849

U.S. DEPARTMENT OF THE INTERIOR · MINERALS MANAGEMENT SERVICE ·

MINERAL REVENUES

OFFSHORE MINERALS

STEWARDSHIP